

AD-A193 188

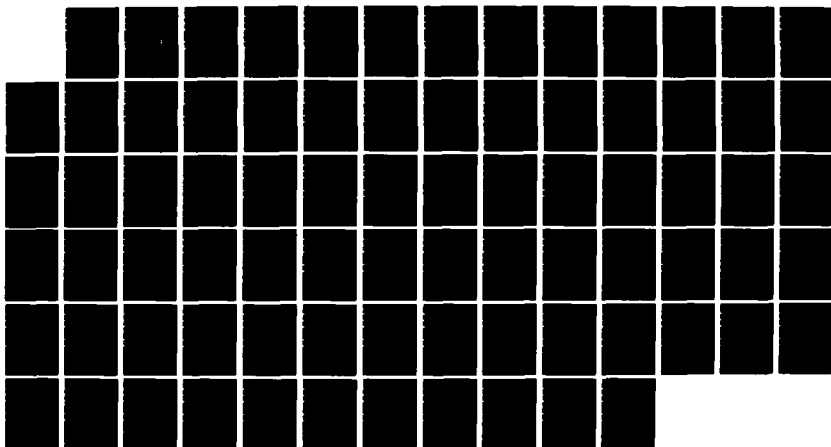
FORMS FOR DOCUMENTING RADIATION SAFETY PROGRAMS(U)  
MEDICAL CENTER SCOTT AFB IL R WEED ET AL JAN 88  
USAFMCS/TR-88/001

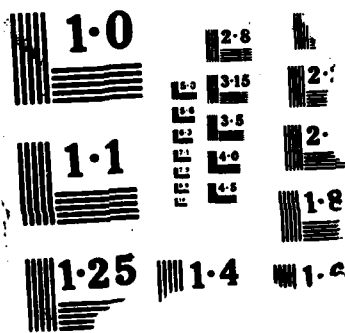
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AD-A193 180

# DEPARTMENT OF RADIOLOGY REPORT

THE FILE COPY

## FORMS FOR DOCUMENTING RADIATION SAFETY PROGRAMS

DEPARTMENT OF RADIOLOGY  
RADIATION SAFETY/HEALTH PHYSICS

JANUARY 1987

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ELECTE  
FEB 17 1988  
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USAF MEDICAL CENTER SCOTT  
23rd AIR FORCE (MAC)  
SCOTT AIR FORCE BASE, IL 62225-5300

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UNCLASSIFIED

REPORT DOCUMENTATION PAGE

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4. Performing Organization Report Number: USAFSMC/TR-88/001
- 6a. Name of Performing Organization: USAF Scott Medical Center
- 6b. Office Symbol: SGHR
- 6c. Address: Scott AFB, IL 62225-5000
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12. Personal Authors: Capt Ronald Weed and Capt Larry Donovan
- 13a. Type of Report: Final
14. Date of Report: January 1988
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19. Abstract: The Department of Radiology, Scott Medical Center, created and compiled this booklet of documental forms in Quality Assurance/Risk Management and ALARA (as low as reasonably achievable) for Nuclear Medicine/Radiology Departments. A health physicist manages, evaluates, trial tests, and currently uses forms such as these. They can be altered or easily redesigned as the needs of radiation surveillance programs change. These *Documental Forms for Ionizing Radiation ("Formless Forms")* should be useful for facilities that devise their own Nuclear Medicine/Radiology Quality Assurance-Risk Management and ALARA PROGRAMS. *(Keywords:)*
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21. Abstract Security Classification: Unclassified
- 22a. Name of Responsible Individual: Capt Ronald Weed
- 22b. Telephone: 618 256-7411 A576-7411
- 22c. Office Symbol: USAF Medical Center Scott/SGHR

## NOTICES

This final report was prepared by personnel of the Scott Medical Center, Department of Radiology, 23rd Air Force, Military Air Command, Scott Air Force, Illinois.

When Government drawings, charts, forms, or other data are used for any purpose other than in connection with a definitely government-related procurement, the United States Government incurs no responsibility nor any obligation whatsoever. The fact that the Government may have formulated or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication, or otherwise in any manner construed, as licensing the holder or any other person or corporation; or as conveying any rights or permission to manufacture, use or sell any patented invention that may in anyway be related thereto.

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## PREFACE

The Department of Radiology, Scott Medical Center, Scott Air Force Base created and compiled forms for this booklet of documental forms in QUALITY ASSURANCE/RISK MANAGEMENT and ALARA for Nuclear Medicine/Radiology Departments. A health physicist manages, evaluates, trial tests and currently uses forms such as these; they can be altered or easily redesigned as the needs of radiation surveillance programs change. These *Documental Forms for Ionizing Radiation* ("Formless Forms") should be useful for facilities which are devising their own Nuclear Medicine/Radiology Quality Assurance-Risk Management and "As Low As Reasonable Achievable" (ALARA) Programs.

### GOAL OF RADIATION SAFETY

The goal of the Radiation Safety Office is to limit patient exposure to ionizing radiation while making maximum use of current radiation sources and devices available. To this end, the Department (1) makes this format using a modern form computer, (2) develops improved documental formats for recording measurements, documenting and setting limits in order to control radiation exposure, and (3) provides technical assistance in designing forms to facilities responsible for QA/RM and ALARA programs using this format.

### STATEMENT OF PURPOSE

This "documental format" was compiled and created over four years in an effort to more reliably and effectively document the ongoing surveillance of an entire Radiation Safety Program. While commercial computer programs can be purchased for radiation safety programs, to our knowledge, this is the first strictly military computer compiled documental format available. It is available on Xerox Star 8010 disc from Department of Radiology or HQ MAC/DAPF (Autovon 576-4840).

### COMMENTS REQUESTED

Readers are encouraged to report errors or omissions to the Department of Radiology, Radiation Safety Office, Scott AFB IL 62225. Your suggestions and comments are encouraged and should be useful to facilities which are devising their own QA/RM and ALARA programs.

*Ronald L. Weed*

RONALD L. WEED, Capt, USAF, BSC  
Health Physicist/Radiation Safety Officer  
Scott Medical Center

*Charles C.D. DuMontier, Maj, USAF, MC*

CHARLES C.D. DuMONTIER, Maj, USAF, MC  
Chairperson, Department of Radiology  
Scott Medical Center

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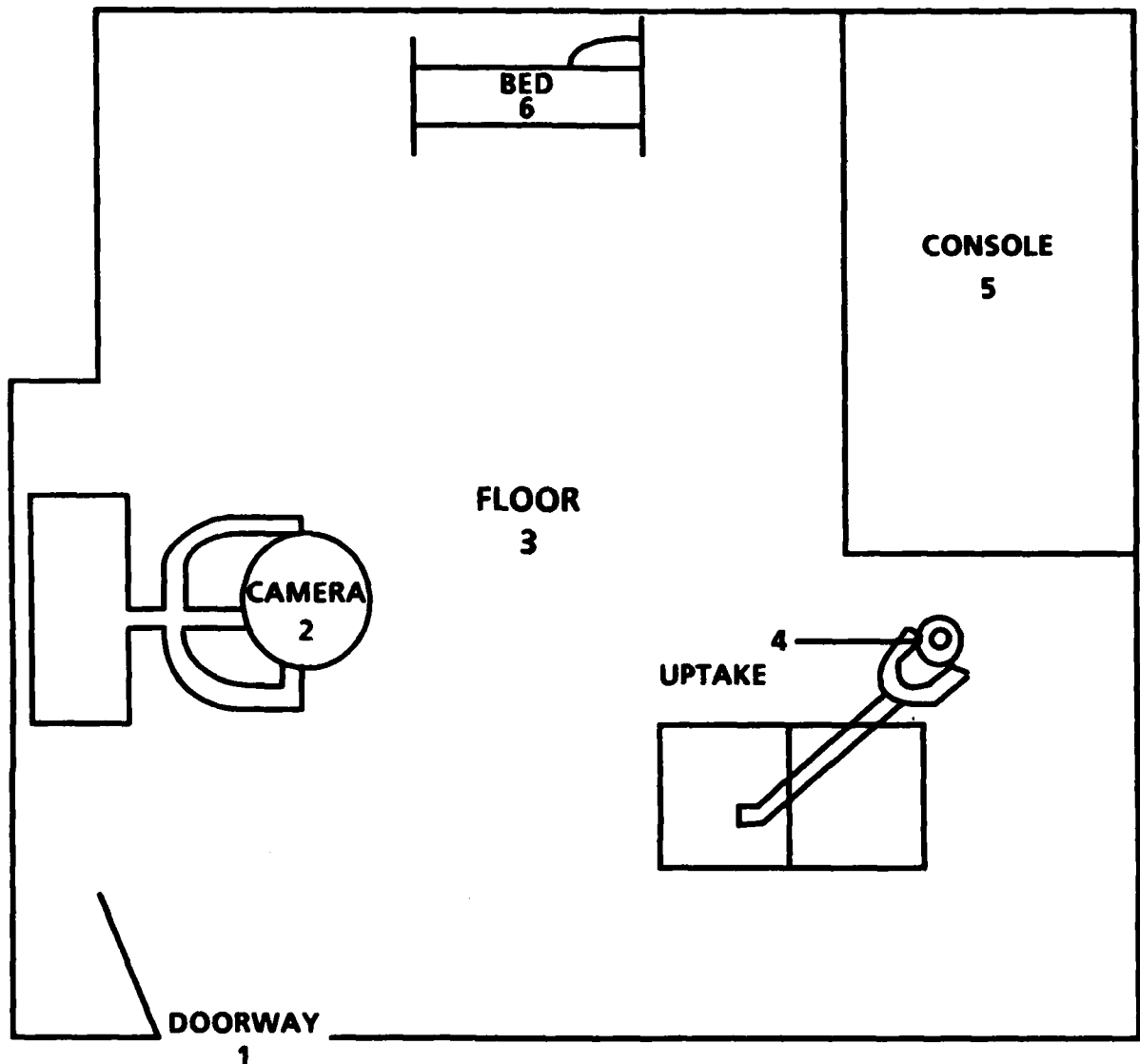
#### USAF MED CEN, SCOTT Form 255, MAY 87

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#### USAF MED CEN, SCOTT FORMS

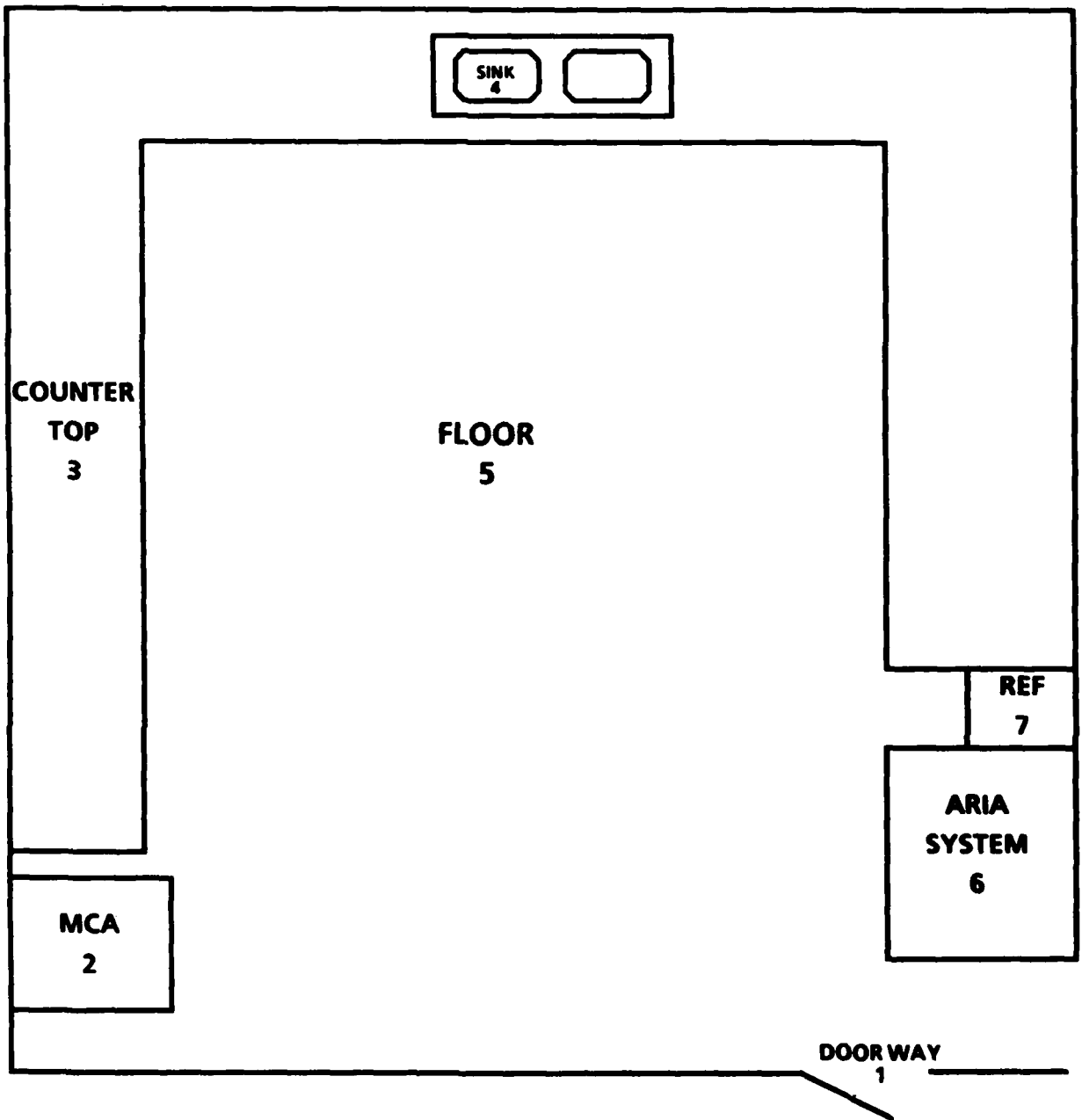
169, APR 83, RADIOACTIVE MATERIAL SHIPMENT RECEIPT RECORD  
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# ROOM LEVEL SURVEY



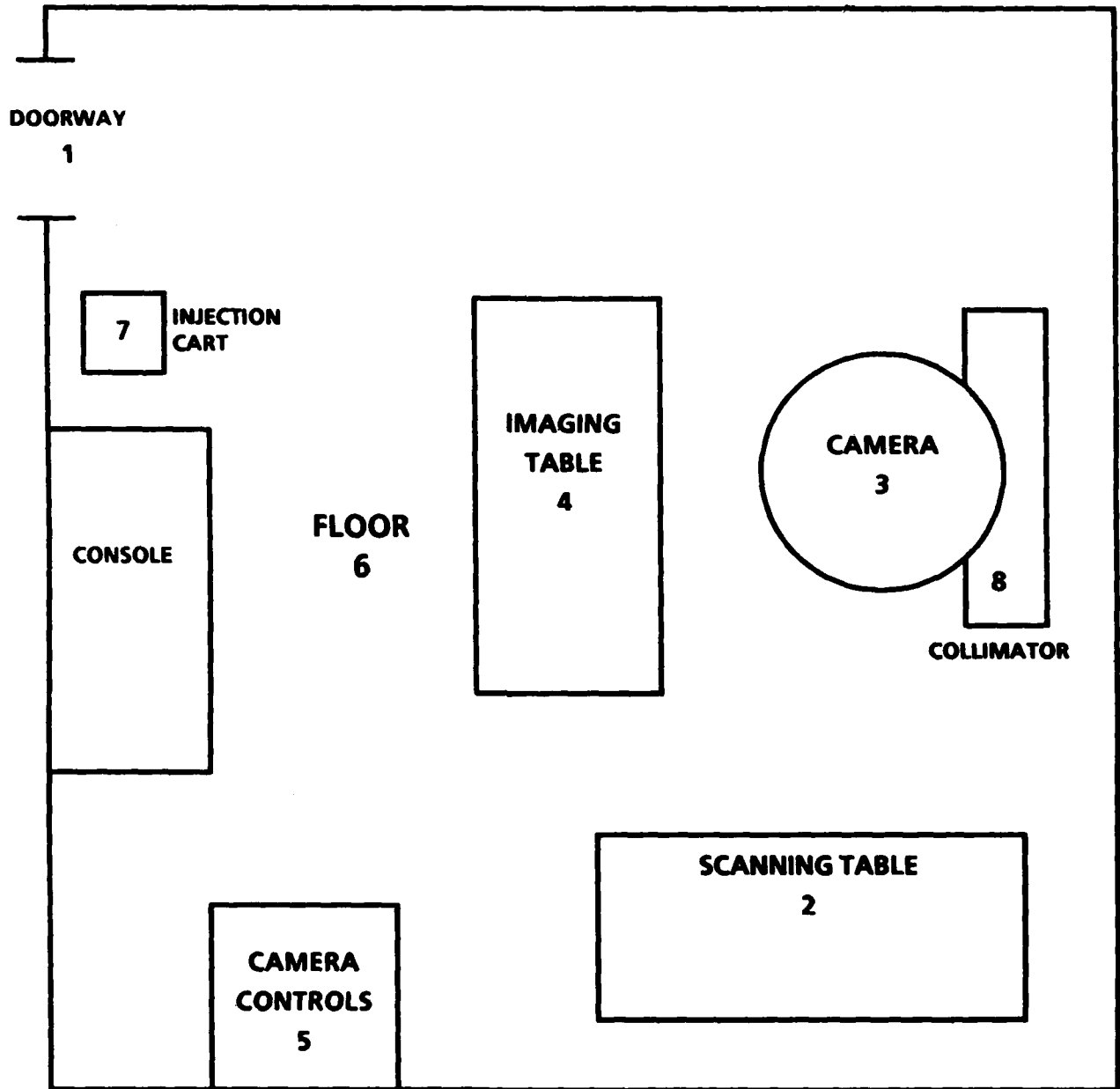
EFFECTIVE DATE	EFFECTIVE DATE

**COUNTING LABORATORY (Room D-5)**



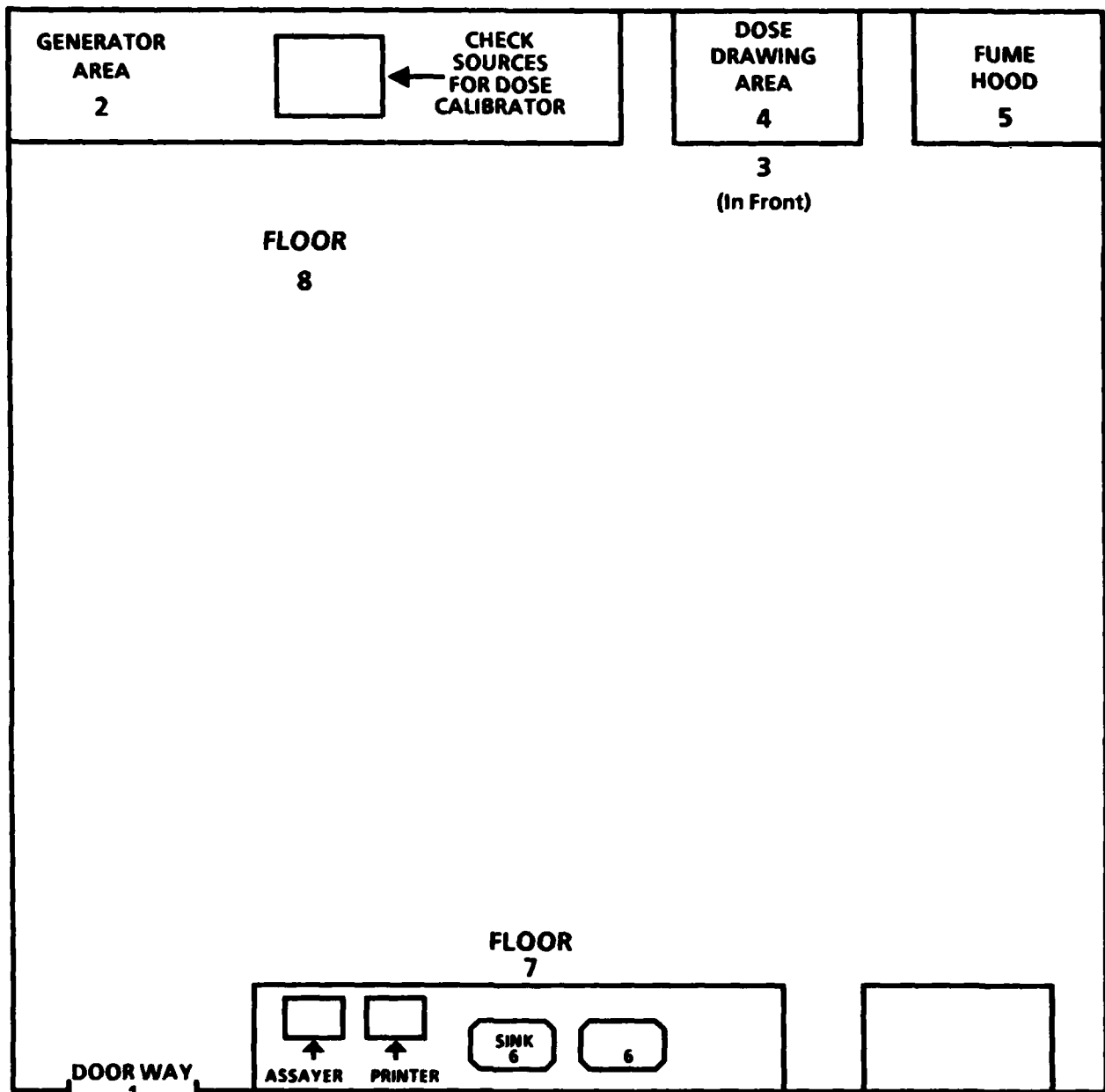
EFFECTIVE DATE	EFFECTIVE DATE

**CAMERA (Room D-6)**



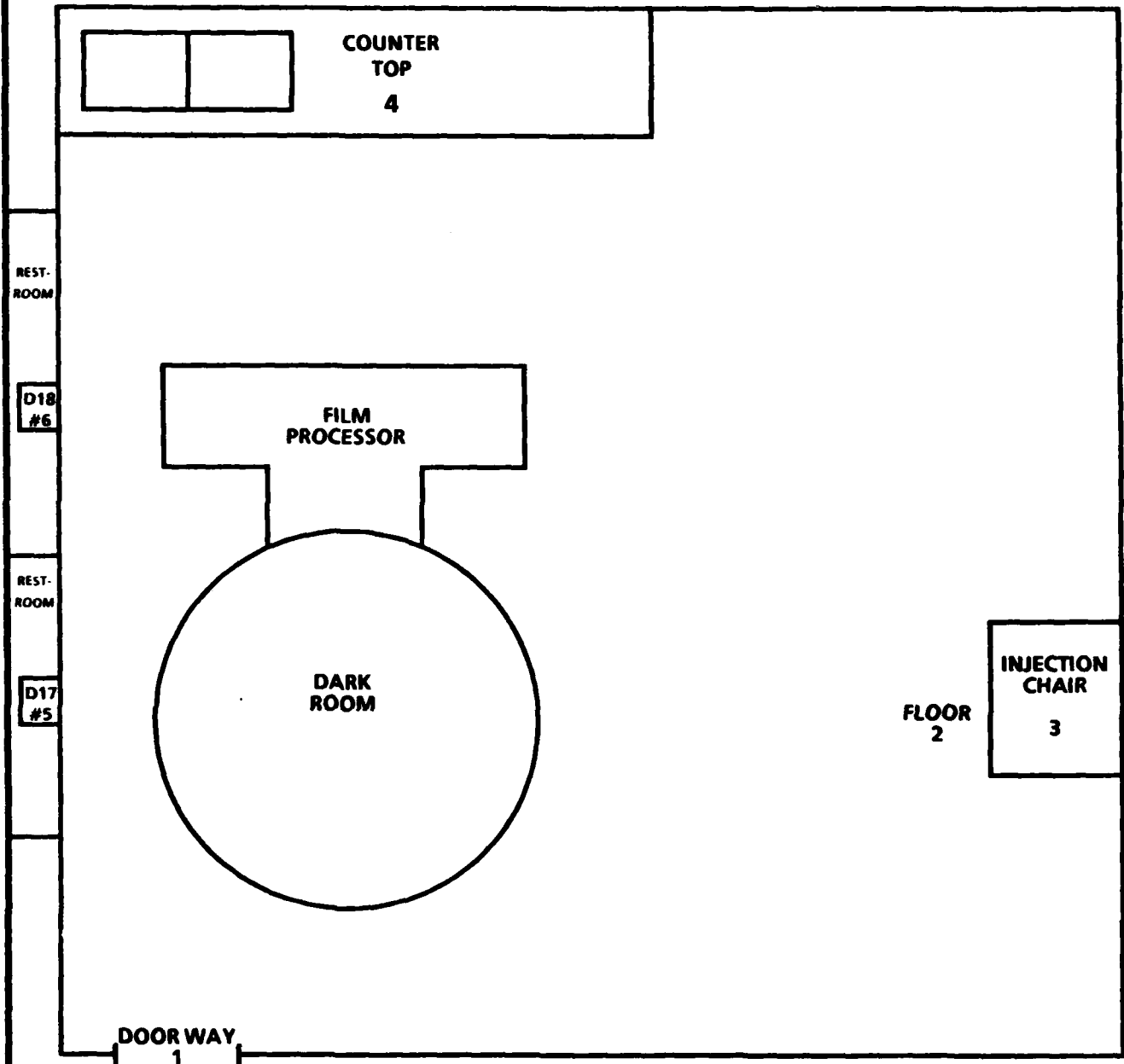
EFFECTIVE DATE	EFFECTIVE DATE

# HOT LABORATORY (Room D-10)



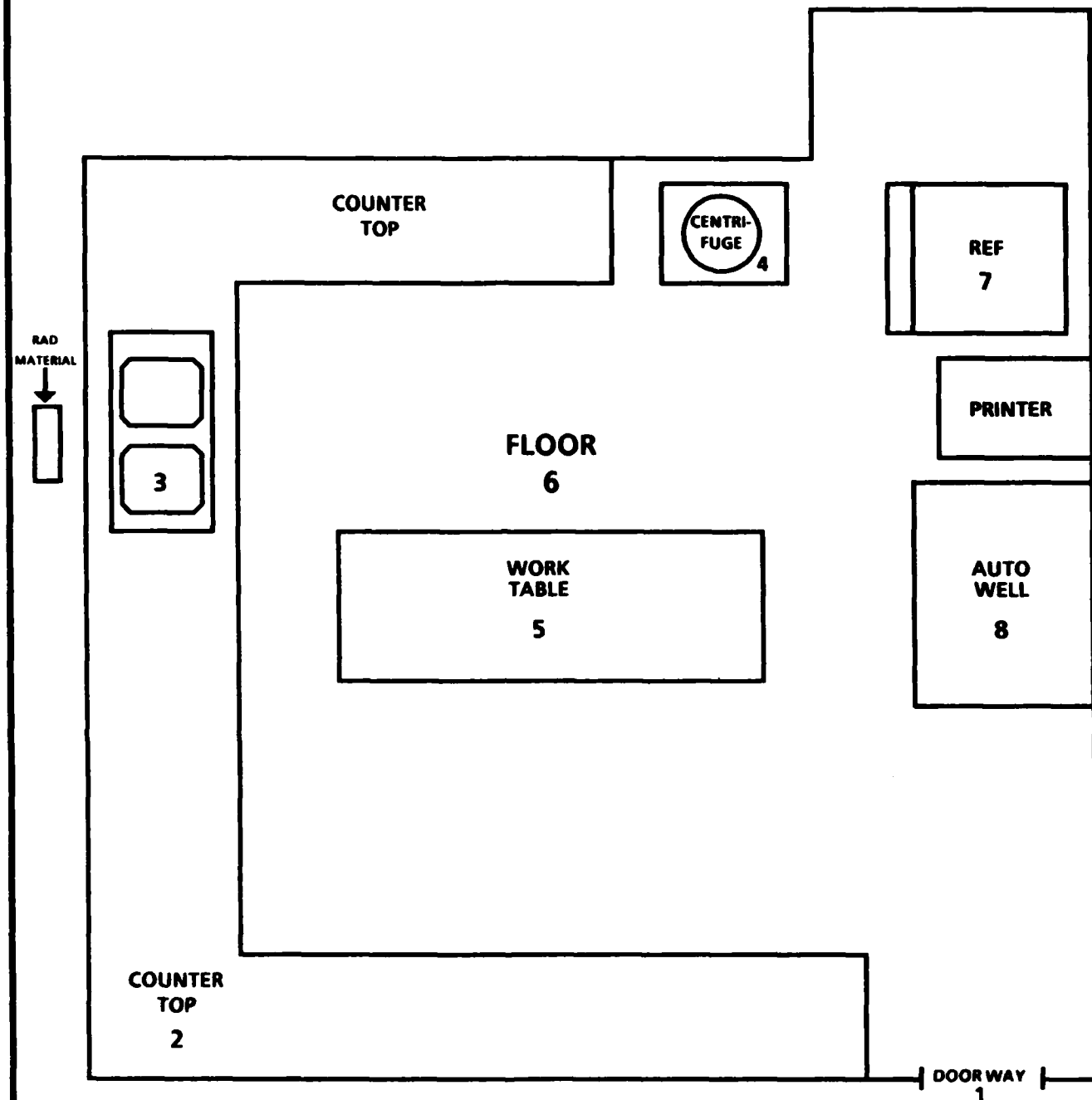
EFFECTIVE DATE	EFFECTIVE DATE

# INJECTION ROOM (D-21)



EFFECTIVE DATE	EFFECTIVE DATE

# ROOM LEVEL SURVEY

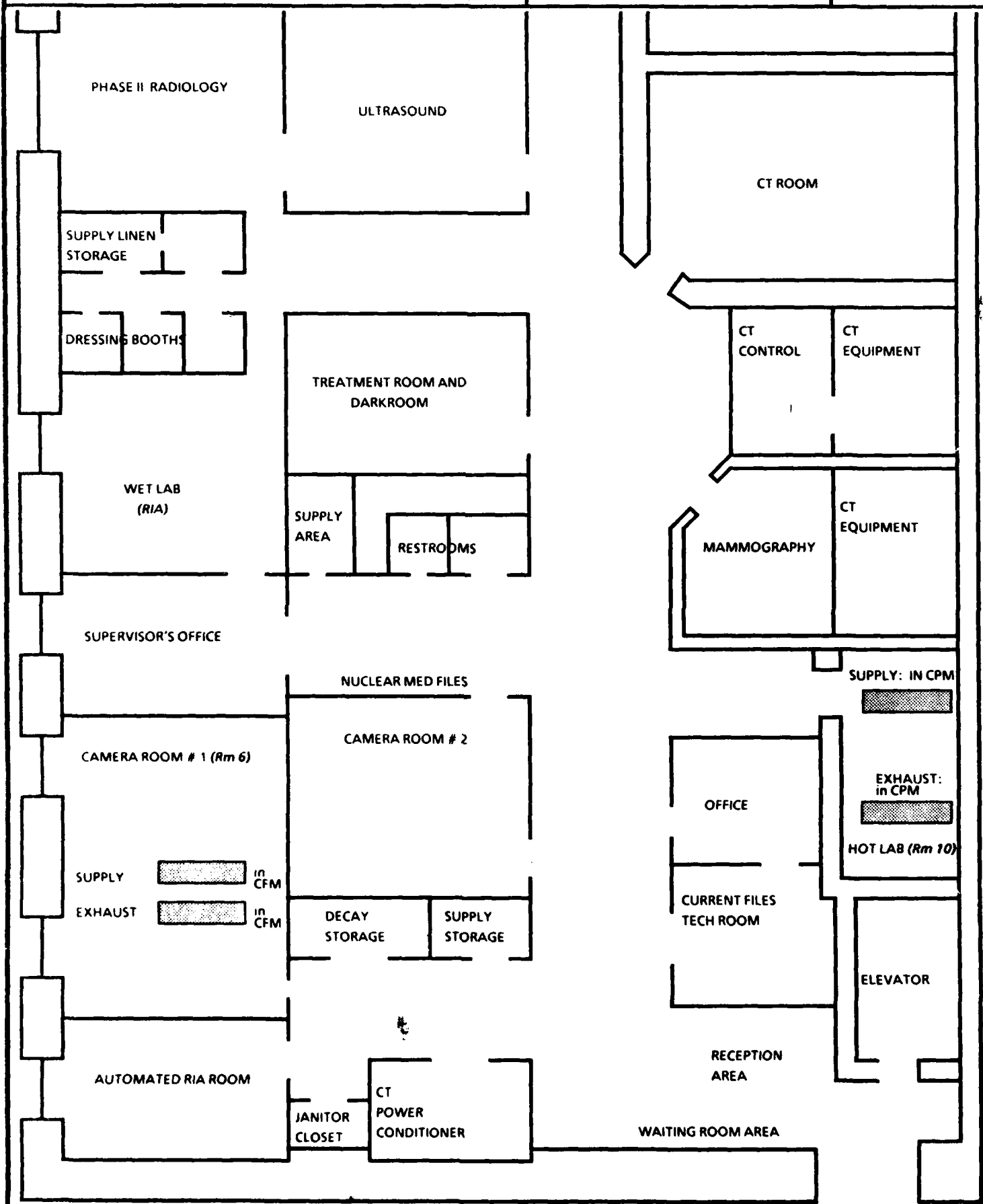


EFFECTIVE DATE	EFFECTIVE DATE

# NUCLEAR MEDICINE FLOOR PLAN AND AIR FLOW REPORT

DATE IN EFFECT

INITIALS



[illegible]

[illegible]



**RESTRICTED AREA: 20,000 DPM OR 2.0 mR PER HR. (Tc99m)**

**ACTION TAKEN**

**USAF MED CEN SCOTT Form 255e, SEP 87**

[illegible]

**PREVIOUS EDITION IS OBSOLETE**

XENO GARD ROOM AIR LOG				ACTION LEVEL		FROM TO		
DATE		NUMBER OF STUDIES	NUMBER OF mCi	CHECK SOURCE (CS-137)			METER READING	
				PRE	POST		MPC HOURS	HOURS
1.						START		
						FINISH		
						DIFFERENCE		
2.						START		
						FINISH		
						DIFFERENCE		
3.						START		
						FINISH		
						DIFFERENCE		
4.						START		
						FINISH		
						DIFFERENCE		
5.						START		
						FINISH		
						DIFFERENCE		
6.						START		
						FINISH		
						DIFFERENCE		
7.						START		
						FINISH		
						DIFFERENCE		
8.						START		
						FINISH		
						DIFFERENCE		
9.						START		
						FINISH		
						DIFFERENCE		

[illegible]





[illegible]

**PREVIOUS EDITION IS OBSOLETE**

[illegible]

[illegible]

**USAF MED CEN SCOTT Form 255m, NOV 87**

PERFORMANCE TESTS				RADIOGRAPHIC ROOM/DEVICE		
	DATE					
SAFETY						
OUTPUT						
SCATTER						
ESE						
KVP						
mA LINEAR						
TIME						
SCATTER						
INVENTORY						
HVL						
QA TESTS (Specify test name)						
OTHER TEST ACCOMPLISHED						
SURVEYOR'S INITIALS						
REMARKS						

[illegible]

USAF MED CEN Form 2550, JAN 87

# RADIATION PROTECTION SURVEY SKETCH, SCATTER, SHIELDING, OUTPUT

## EQUIPMENT TYPE

☐ C-ARM    ☐ FLUOROSCOPIC    ☐ X-RAY  
☐ MAMMOGRAPHY    ☐ DENTAL X-RAY    ☐ PORTABLE

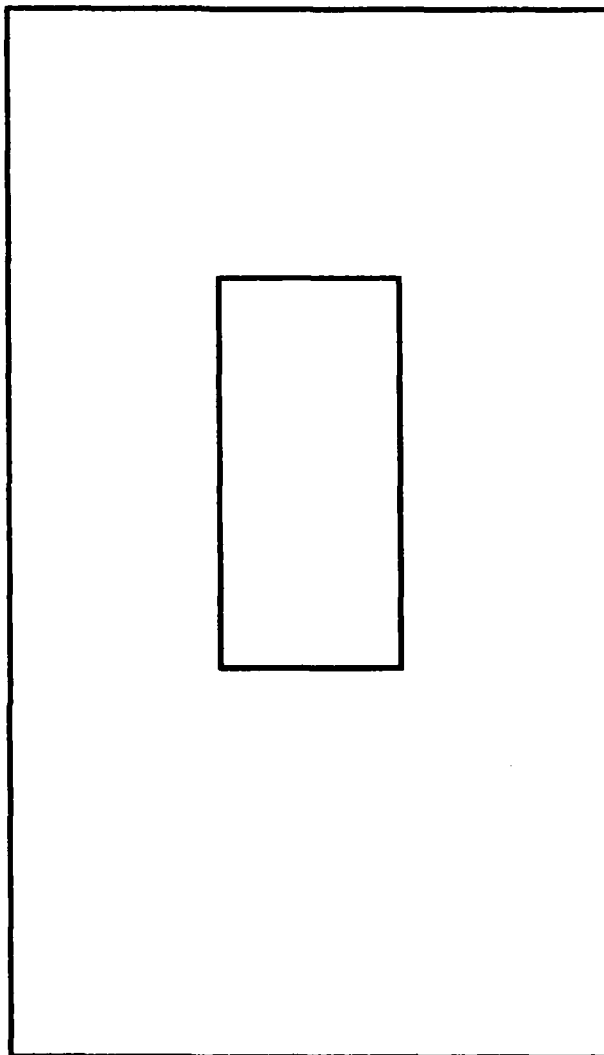
ROOM NO./BLDG.

DATE

SURVEYOR(s)

## SCATTER IN mR per HR

Show all barriers,  
 doors, windows, walls,  
 and location of  
 personnel and  
 equipment.



+  
 SHOW  
 N

TECHNIQUE USED		____ KVp      ____ mA      ____ SEC		PHANTOM MATERIAL	
OUTPUT WITH PHANTOM			OUTPUT WITHOUT PHANTOM		OUTPUT WITH PHANTOM
* MEDIUM SIZE PATIENT ____ R/min		** LARGE SIZE PATIENT ____ R/min		____ TYPE      ____ R/min	
DETECTOR TYPE			SERIAL NUMBER		DATE OF CALIBRATION

\* 2x.75 in Al

\*\* 2 x .75 in Al + 2mm Pb

[illegible]





RADIOLOGICAL EXPOSURE OUTPUT SURVEY							YEAR		ROOM							
<b>CERTIFICATION OF RADIOLOGIC EXPOSURE RATE</b>																
This notice is to certify that the x-ray machine in this room was surveyed for output exposures and was compared with federal guidelines for typical patient exposures (See F Below)																
<b>EXPOSURE RATES WITH MEDICAL X-RAY TUBE</b>																
<b>SUMMARY OF MONTHLY EXPOSURE OUTPUTS</b>																
<b>A. TECHNIQUE</b> <input type="text"/> Kvp <input type="text"/> mA <input type="text"/> sec <input type="text"/> IN *						<b>B.</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">SURVEY INSTRUMENT</td> <td style="width: 30%;">SERIAL NUMBER</td> <td style="width: 30%;">DATE OF CALIBRATION</td> </tr> <tr> <td style="height: 40px;"></td> <td></td> <td></td> </tr> </table>					SURVEY INSTRUMENT	SERIAL NUMBER	DATE OF CALIBRATION			
SURVEY INSTRUMENT	SERIAL NUMBER	DATE OF CALIBRATION														
* FROM ANODE TO TABLE TOP																
<b>C. EXPOSURE OUTPUTS (Average of 4-5 Workdays)</b>																
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC				
EXPOSURE (mR)																
EXPOSURE per mAs mR/mAs																
NAME AND DATE																
<b>NOTE: D. NORMAL RANGES (Average of 20 workday exposures)</b>																
IN mR						IN mR/mAs			AS OF DATE							
<b>E. ADDITIONAL VIEWS OF TYPICAL PATIENT EXPOSURES</b>																
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC				
<input type="checkbox"/> ABDOMEN																
<input type="checkbox"/> CHEST																
<b>TECHNIQUE</b>																
KVP				mA			TIME		ANODE TO TABLE DISTANCE							
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC				
OTHER																
(NAME)																
<b>F. FEDERAL GUIDELINES (per view) are:</b>																
<div style="display: flex; justify-content: space-between;"> <div>           CHEST (DA) = 30 mR            SKULL (LAT) = 300 mR            ABDOMEN (AP) = 750 mR            CERVICAL SPINE (AP) = 250            THORACIC SPINE (AP) = 900 mR         </div> <div>           FULL SPINE (AP) = 300 mR            LUMBO-SACRAL SPINE (AP) = 1000 mR            RETROGRADE PYELOGRAM (AP) = 900 mR            FEET BEARING (DP) = 27 mR         </div> </div>																
REMARKS																

# **FLUOROSCOPIC EXPOSURE RATE OUTPUT SURVEY**

*(For Medium and Heavy Patients)*

## **CERTIFICATION OF FLUOROSCOPE SURVEY AND PATIENT EXPOSURE RATES**

This notice is to certify that the fluoroscope in this room was surveyed for output exposure and was found to be below the appropriate federal guidelines (See "E" below) for limiting patient exposure when operated by the trained physician or technician

This notice provides you with the following measured exposure rates

### **SUMMARY OF MONTHLY EXPOSURE RATE OUTPUTS**

#### **A. TECHNIQUE (Check One)**

☐ kVp    ☐ mA    ☐ TABLE    ☐ PORTABLE

#### **B.**

SURVEY INSTRUMENT

SERIAL NUMBER

DATE OF CALIBRATION

#### **C. EXPOSURE RATES BY PATIENT SIZE**

##### **PATIENT EXPOSURE RATES**

Auto    Average Tissue Thickness (13cm): \_\_\_\_\_ R/min., for \_\_\_\_\_ kVp, \_\_\_\_\_ mA

Mode

Maximum Tissue Thickness (26cm): \_\_\_\_\_ R/min., for \_\_\_\_\_ kVp, \_\_\_\_\_ mA

Manual    Average Tissue Thickness (13cm): \_\_\_\_\_ R/min., for \_\_\_\_\_ kVp, \_\_\_\_\_ mA

Mode

Maximum Tissue Thickness (26cm): \_\_\_\_\_ R/min., for \_\_\_\_\_ kVp, \_\_\_\_\_ mA

##### **PHYSICIAN EXPOSURE RATES**

Eyes and Head \_\_\_\_\_ mr/Hour, Maximum, Unshielded

Automatic Mode

Body \_\_\_\_\_ mr/Hour, at Tabletop, Unshielded

Maximum Machine Output

SURVEY INSTRUMENT

SERIAL NUMBER

**NOTE:** Lead aprons on fluoroscopists and on machine will reduce physician exposure rates behind aprons to 1/10 or less.

#### **C. EXPOSURE OUTPUTS (Average of 4-5 Workdays)**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
EXPOSURE RATE (R/min) AVERAGE PATIENT (13cm)												
EXPOSURE RATE (R/min) THICK PATIENT (16cm)												
NAME AND DATE												

#### **D. NORMAL RANGES (Averaged for 6 Months) FOR:**

MEDIUM PATIENT

HEAVY PATIENT

#### **E. FEDERAL UNIT IS 10R/min for AERC**

REMARKS

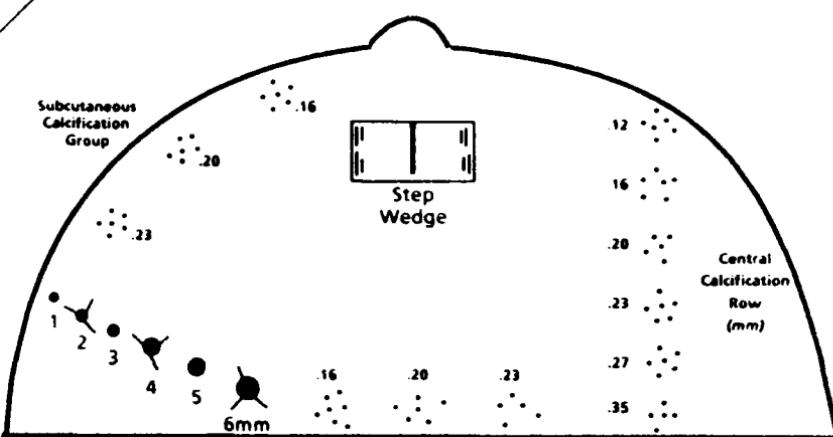
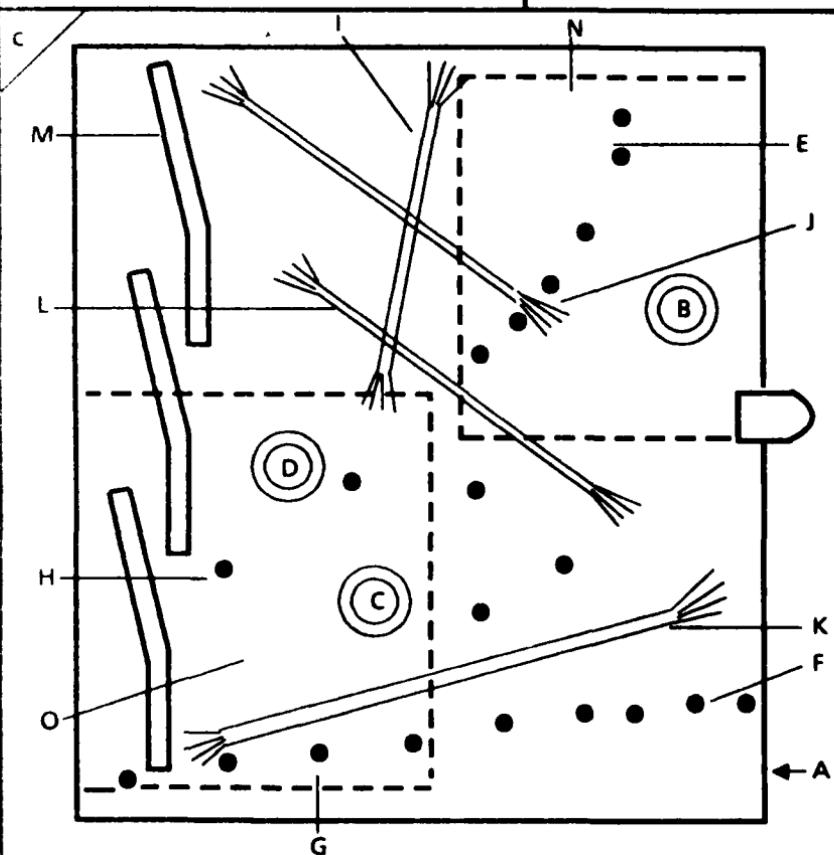
**NUCLEAR MEDICINE  
PERSONNEL RADIATION SURVEY**

**ACTION LEVEL**  
**PROTECTIVE CLOTHING IN RESTRICTED AREA** 2000 DPM or 1.0 mR PER HR  
 2000 DPM or 2.0 mR PER HR  
**SKIN:** 2000 DPM or 0.1 mR PER HR/2000 DPM or 1.0 mR PER HR.

NAME \_\_\_\_\_

[illegible]

QUARTERLY RADIATION EXPOSURE REPORT ALARA SUMMARY		DATE	
FROM		TO	
QUARTERLY SUMMARY OF _____ QUARTER RADIATION EXPOSURE REPORT			
<p>As part of our ALARA (As Low As Reasonably Achievable) Program, personnel radiation exposures are monitored by the Radiation Safety Officer (RSO). Quarterly exposure in excess of Level I are reported to the Radiation Safety Committee (RSC) for further action. Exposures in excess of Level II are investigated by the RSO, reported to the RSC and then sent to the Commander for review. ALARA quarterly exposure levels in millirems as defined in our Nuclear Regulatory Commission Permit are as follows (in inRem):</p>			
		LEVEL I	LEVEL II
WHOLE BODY, HEAD, TRUNK, BLOODFORMING ORGANS, LENS OF THE EYE, GONADS		125	375
HANDS, FOREARMS, FEET, ANKLES		1875	5625
SKIN OF WHOLE BODY		750	2250
<p>During this quarter, all badged individuals in your organization were less than Level I above. The records for your organization are kept in the RSO office (Rm DX122, Radiology); however, any individual or supervisor wishing to review the records may do so by contracting me at extension 6-7411. The base bioenvironmental engineer also maintains a record.</p>			
<p>COMMENTS AND DISCREPANCIES OF PERSONNEL DOSIMETRY REPORTS</p>			
<p>THIS REPORT IS FOR YOUR RECORDS. IF YOU HAVE ANY QUESTIONS OR COMMENTS, PLEASE DO NOT HESITATE TO CALL ME AT 6 7411</p>		<p style="text-align: center;">RADIATION SAFETY OFFICER/HEALTH PHYSICIST</p>	

<b>MAMMOGRAPHIC PHANTOM QUALITY CONTROL LOG</b>																					
TECHNIQUE USED <input type="checkbox"/> Kvp <input type="checkbox"/> mAs		ROOM D-19		DATE FOR (month)																	
INSTRUCTIONS: PLACE AN "S" IN THE BLOCKS WHERE YOU SEE SPECKS, AN "F" IN THOSE THAT CONTAIN A FIBER, AND AN "M" IN THOSE THAT CONTAIN A MASS. LEAVE THOSE BLANK WHICH DO NOT SHOW AN OBJECT. A MAGNIFYING GLASS SHOULD BE USED TO SEARCH FOR SMALL TEST OBJECTS.		<b>"SHOULD SEE"</b> MAKE NOTE OF DISCREPANCIES BELOW																			
<b>A</b>  <div style="text-align: center; margin-bottom: 5px;">TOP</div> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; width: 100%;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td></tr> </table>		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	<b>B</b> 			
1	2	3	4																		
5	6	7	8																		
9	10	11	12																		
13	14	15	16																		
SHOULD HAVE SEEN (Numbers):		ITEMS NOT NOTED ARE:																			
<b>C</b> 		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 20%; text-align: center;">NOTED</th> </tr> </thead> <tbody> <tr> <td>1. Area A (Front edge on breast skin line)</td> <td></td> </tr> <tr> <td>2. Points B, C, &amp; D (Masses and indicate changes in subject latitude)</td> <td></td> </tr> <tr> <td>3. Indicators E, F, G, H (Calcifications and demonstrate exposure related changes in contrast)</td> <td></td> </tr> <tr> <td>4. Areas I, J, K, &amp; L (Vessels and five structures)</td> <td></td> </tr> <tr> <td>5. Series M Bars (Ribs &amp; surrounding areas)</td> <td></td> </tr> <tr> <td>6. N &amp; O (Resolution bar targets)</td> <td></td> </tr> </tbody> </table> <div style="border-top: 1px solid black; height: 100px; margin-top: 5px;"></div>					NOTED	1. Area A (Front edge on breast skin line)		2. Points B, C, & D (Masses and indicate changes in subject latitude)		3. Indicators E, F, G, H (Calcifications and demonstrate exposure related changes in contrast)		4. Areas I, J, K, & L (Vessels and five structures)		5. Series M Bars (Ribs & surrounding areas)		6. N & O (Resolution bar targets)			
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5. Series M Bars (Ribs & surrounding areas)																					
6. N & O (Resolution bar targets)																					
COMMENTS/ACTION TAKEN		COMMENTS/ACTIONS TAKEN																			
HEALTH PHYSICIST'S NAME		TECHNICIAN'S NAME																			

# RADIOACTIVE MATERIAL SHIPMENT RECEIPT RECORD

## 1. GENERAL IDENTIFICATION DATA

A. PURCHASE ORDER NUMBER	B. INVOICE NUMBER	C. LOCALLY ESTABLISHED CONTROL NUMBER
--------------------------	-------------------	---------------------------------------

## 2A. CONDITION OF PACKAGE (Mark "X" condition and explain in item 2B, if required)

<input type="checkbox"/> OK	<input type="checkbox"/> PUNCTURED	<input type="checkbox"/> WET	<input type="checkbox"/> STATUS	<input type="checkbox"/> CRUSHED	<input type="checkbox"/> OTHER (Specify)
-----------------------------	------------------------------------	------------------------------	---------------------------------	----------------------------------	--

2B

## 3. EXTERNAL PACKAGE DATA

A. LABELED  <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> EXEMPT	B. TYPE LABEL  <input type="checkbox"/> WHITE 1 <input type="checkbox"/> YELLOW 11 <input type="checkbox"/> YELLOW 111		
C. ACTIVITY AMOUNT	D. TRANSPORTATION INDEX	E. TYPE ISOTOPE	
F. PACKAGE RADIATION LEVELS		G. INSTRUMENT USED TO MEASURE LEVELS	
(1) MEASUREMENT AT SURFACE		(1) TYPE	
(A) mR/hr	(B) REPORTABLE (Greater than 200 mR/hr) <input type="checkbox"/> YES <input type="checkbox"/> NO	(2) LAST CALIBRATION DATE (Day, Month, Year)	
(2) MEASUREMENT AT ONE METER		(3) BACKGROUND RADIATION READING	
(A) mR/hr	(B) REPORTABLE (Greater than 10 mR/hr) <input type="checkbox"/> YES <input type="checkbox"/> NO		

## 4. PACKING SLIP/VIAL AGREEMENT

	YES	NO	DIFFERENCE (Actually received)
A. RADIONUCLIDE			
B. AMOUNT			
C. CHEMICAL FORM			

## 5. SWIPE TEST RESULTS

A. OUTER CONTAINER	CPM	X	EFFICIENCY	=	DPM
B. FINAL	CPM	X	EFFICIENCY	=	DPM

## 6. SURVEY RESULTS OF PACKING MATERIAL AND CARTONS

7. LABELS REMOVED OR DEFACED <input type="checkbox"/> YES <input type="checkbox"/> NO	8. DISPOSITION OF PACKAGE AFTER INSPECTION
--	--

## 9. NRC/CARRIER NOTIFICATION DATA

A. NOTIFICATION REQUIRED  <input type="checkbox"/> YES <input type="checkbox"/> NO	B. IF YES, COMPLETE FOLLOWING DATA ON NOTIFICATION ACTION		
	TIME	DATE (Day, Month, Year)	NAME OF PERSON NOTIFIED (Last, First, Middle Initial)

## 10. REMARKS

## 11. SURVEY DATA

A. DATE SURVEYED	B. TIME	C. SIGNATURE OF SURVEYOR
------------------	---------	--------------------------

(FOR EXEMPT QUANTITIES)

**RADIOACTIVE MATERIAL SHIPMENT RECEIPT RECORD**

**RIA**

D O	1. GENERAL IDENTIFICATION DATA					
	A. PURCHASE ORDER NUMBER		B. INVOICE NUMBER		C. LOCALLY ESTABLISHED CONTROL NUMBER	
2A. CONDITION OF PACKAGE (Mark "X" condition and explain in item 2B, if required)						
<input type="checkbox"/> OK <input type="checkbox"/> PUNCTURED <input type="checkbox"/> WET <input type="checkbox"/> STATUS <input type="checkbox"/> CRUSHED <input type="checkbox"/> OTHER (Specify)						
2B.						
3. EXTERNAL PACKAGE DATA						
A. LABELED			B. TYPE LABEL			
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> EXEMPT			<input type="checkbox"/> WHITE - 1 <input type="checkbox"/> YELLOW - 11 <input type="checkbox"/> YELLOW - 111			
C. ACTIVITY AMOUNT			D. TRANSPORTATION INDEX		E. TYPE ISOTOPE	
F. PACKAGE RADIATION LEVELS					G. INSTRUMENT USED TO MEASURE LEVELS	
D O	(1) MEASUREMENT AT SURFACE					(1) TYPE
	(A) mR/hr		(B) REPORTABLE (Greater than 200 mR/hr)			Ludlum 12
			<input type="checkbox"/> YES <input type="checkbox"/> NO			(2) LAST CALIBRATION DATE (Day, Month, Year)
	(2) MEASUREMENT AT ONE METER					
(A) mR/hr		(B) REPORTABLE (Greater than 10 mR/hr)			(3) BACKGROUND RADIATION READING	
		<input type="checkbox"/> YES <input type="checkbox"/> NO			Oil uR/hr	
4. PACKING SLIP/VIAL AGREEMENT						
					YES	NO
A. RADIONUCLIDE						
B. AMOUNT						
C. CHEMICAL FORM						
NOTE 5. SWIPE TEST RESULTS (Exempt) TO CFR 20.205(b)(1)(12)						
A. OUTER CONTAINER			CPM	X	EFFICIENCY	DPM
					=	
B. FINAL			CPM	X	EFFICIENCY	DPM
					=	
6. SURVEY RESULTS OF PACKING MATERIAL AND CARTONS			7. LABELS REMOVED OR DEFACED		8. DISPOSITION OF PACKAGE AFTER INSPECTION	
mR/hr, cpm			<input type="checkbox"/> YES <input type="checkbox"/> NO			
9. NRC/CARRIER NOTIFICATION DATA						
A. NOTIFICATION REQUIRED		B. IF YES, COMPLETE FOLLOWING DATA ON NOTIFICATION ACTION				
<input type="checkbox"/> YES <input type="checkbox"/> NO		TIME	DATE (Day, Month, Year)		NAME OF PERSON NOTIFIED (Last, First, Middle Initial)	
10. REMARKS						
11. SURVEY DATA						
D O	A. DATE SURVEYED		B. TIME		C. SIGNATURE OF SURVEYOR	



ACTION LEVEL RESTRICTED AREA 2000DPM OR 1.0 mR PER HR / 20,000 DPM (Tc99) OR 2 mR PER HR UNRESTRICTED AREA 200 DPM OR 0.1 mR PER HR / 2,000 DPM (Tc99) OR 1.0 mR PER HR				<b>RADIOISOTOPE LABORATORY</b> <b>SURVEY REPORT</b> (Rooms and Storage Area)		MEDICAL FACILITY USAF MEDICAL CENTER, SCOTT SCOTT AFB IL 62225-5300	
NAME OF INVESTIGATOR		FREQUENCY WEEKLY	LOCATION NUCLEAR MEDICINE SERVICES	BLDG 1530	ROOM SEE DIAGRAM	MOST RECENT ORDER (AMOUNT AND DATE) RECURRING	

<b>1. ISOTOPES USED</b>							
BETA (Circle)				GAMMA (Circle)		ALPHA EMITTER (Circle)	
LOW ENERGY		HIGH ENERGY		LOW ENERGY		HIGH ENERGY	
N/A		N/A		N/A		N/A	
H-3, C-14, S-35, Ca-45, Tc-99m		Sr-90, P-32, Fe-55		Xe-133, I-125, Tl-201, Tc-99m		Cs-137, Co-60, I-131, Ra-226	
OTHER (Specify) N/A		OTHER (Specify) N/A		OTHER (Specify) I-123, Co-57, Cr-51, Ga-67		OTHER (Specify) N/A	
				OVERALL EVALUATION <input type="checkbox"/> SATISFACTORY <input type="checkbox"/> UNSATISFACTORY			

<b>2. GENERAL LABORATORY HOUSEKEEPING</b>						<b>EXHAUST RATE (Face Velocity)</b>	
<b>A. SIGN AND LABELS</b>						<b>B. HOOD FLOW RATE - DATE</b>	
RAD HOOD	DOOR	RAD SINK	RAD REFRIG	RAD STORAGE AREA	RAD WASTE	CF/M	
YES	YES	YES	YES	YES	YES		

<b>3. SURVEY DATA</b>		LOCATION	NET DPM OR $\mu$ Ci
		1	D-5, ENTRANCE, FLOOR
		2	REFRIGERATOR, RAD
		3	SINK RIM
		4	RIA II
		5	D-6 ENTRANCE, FLOOR
		6	GENERATOR STORAGE
		7	CAMERA COLLIMATOR
		8	CAMERA COMPUTER
		9	SCANNING TABLE
		10	D-13, ENTRANCE FLOOR
		11	CAMERA COLLIMATOR
		12	CAMERA CONSOLE
		13	D-14, DESK
		14	D-15, ENTRANCE FLOOR
		15	SINK RIM
		16	RIA WORK TABLE
		17	REFRIGERATOR RAD
		18	GAMMA COUNTER, AUTOWELL
		19	D-21, DARKROOM COUNTERTOP
		20	SINK RIM
		21	INJECTION CHAIR
		22	D-11, UPTAKE PROBE
		23	D-9, REFRIGERATOR
		24	D-10, GENERATOR SHIELD
		25	DRAWING AREA
		26	HOOD AND STORAGE LOCKER
		27	REFRIGERATOR RAD
		28	SINK RIM
		29	5TH FLOOR, WASTE ENTRANCE
		30	1ST BARREL ON THE RIGHT
31	RESTROOM		
32	RESTROOM		

<b>4. CONTAMINATION ANALYSIS</b>						
SOURCE	1	I-129	2	Co 57	3	Cs-137
ACTIVITY	1	0.148	2	121 $\mu$ Ci	3	0.101 $\mu$ C
EFFICIENCY	1	61%	2	36%	3	7%

MODE		BACKGROUND	
<input checked="" type="checkbox"/> GAMMA COUNTER	<input type="checkbox"/> CPM		
<input type="checkbox"/> GAS FLOW	<input type="checkbox"/> DPM		
<input type="checkbox"/> LIQUID SCINT			

<b>5. ACTION</b>		
<input type="checkbox"/> LABORATORY, APPEARS FREE FROM CONTAMINATION <input type="checkbox"/> CIRCLED AREAS NEED TO BE DECONTAMINATED <input type="checkbox"/> CONTACT HEALTH PHYSICIST FOR RESURVEY		
E-520	LUDLUM-12	OTHER
CALIBRATION DUE DATE	CALIBRATION DUE DATE	CALIBRATION DUE DATE
LUDLUM 12		E-520
D-5 ARIA WASTE =		D-6 USED 2x2's =
D-15 RIA TUBES =		D-21 USED NEEDLES AND SYRINGES =
5TH FLOOR STORAGE BARRELS =		
SURVEYOR (Signature)		DATE

ANY QUESTIONS OR COMMENTS SHOULD BE DIRECTED TO THE UNDERSIGNED AT EXTENSION 67507

SCOTT MEDICAL CENTER ANNUAL RADIOGRAPHIC SURVEY (Part I)										
SURVEY PERFORMED BY						REPORT DATE				
SURVEY PERFORMED BY						REPORT DATE				
I. FACILITY IDENTIFICATION										
A. ORGANIZATION			B. BUILDING NO.		C. ROOM NO.		D. PHONE NO.			
II. EQUIPMENT IDENTIFICATION										
	MANUFACTURER			MODEL NO.			SERIAL NO.			
A. CONSOLE										
B. COLLIMATOR										
C. TUBE INSERT										
D. TUBE HOUSING										
E. OTHER										
1. PHASE <input type="checkbox"/> SINGLE <input type="checkbox"/> THREE PHASE <input type="checkbox"/> CONSTANT POTENTIAL				2. <input type="checkbox"/> MOBILE <input type="checkbox"/> SPECIAL PURPOSE (Specify) <input type="checkbox"/> FIXED				3. DATE OF LAST SURVEY		
III. PERSONNEL EXPOSURE								YES	NO	N/A
A. Are exposures, as recorded by personal dosimetry results, within permissible occupational limits?										
B. Review of dosimetry results does not show any adverse exposure trends?										
IV. RADIATION PROTECTION AND CALIBRATION SURVEYS										
A. Radiation protection survey has been conducted in accordance with AFM 161-38, 3b?										
B. Have actions been completed on all recommendations made in the last survey?										
C. Is X-ray equipment periodically inspected and calibrated by MERC?										
D. Are records of surveys (Radiation Protection and MERC maintenance) on hand?										
E. Have there been changes in qualities, equipment or procedures since last radiation protection survey?										
F. Personnel shielding stored properly?										
G. Personnel shielding tested? <input type="checkbox"/> Semi Annual <input type="checkbox"/> Yearly										
H. Are personnel shields used routinely?										
I. Personal dosimeters worn?										
J. Personnel shielding available?										
Aprons										
Gloves										
Gonadal										
K. Operators do not routinely hold patients?										
L. Operators use shielding when holding patients?										
V. QUALITY CONTROL										
A. Does department have a formal quality assurance program?										
B. Is written policy on hand?										
C. Are the radiation protection practices evaluated?										
D. Are the quality assurance program elements evaluated? <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Yearly										
E. Which of the following QA Elements are (is) followed? Frequency?				DAILY	WEEKLY	MONTHLY				
TEMPERATURE										
CHEMICAL CHANGES										
SPEED										
CONTRAST										
BASE FOG										
FILM REJECTS										
PROCESSOR CLEANING										
VI. SAFETY										
A. GENERAL				SEMI ANNUAL	YEARLY					
1. Are interlocks devices checked?										
2. On Off Beam Control Mechanism checked?										
3. Safety Warning Devices checked?										
4. All inspections (1, 2, 3 above) filed?										

VI SAFETY (Continued)				YES	NO	N/A
5 Are Warning Signs posted?						
"Radiation Area"						
"Pregnant Female"						
"Knock before Entering"						
6 Are restrictions placed on equipment and facilities (AFM 161-38, 103h) being observed?						
B Fluoroscopic Equipment						
1 Useful beam attenuated by a primary barrier						
2 Collimating device present						
3 Deadman switch present						
4 Bucky slot shield present						
5 Drapes or hinged or sliding panels intercept scattered radiation						
6 Timer's audible signal sounds at end of 5 minutes without turning off						
7 Timer's audible signal sounds at end of 5 minutes without turning off						
8 Image intensification present kVp and mA indicator at operator's location						
9a Image intensification available on mobile machine						
b Source to Skin Distance is more than 12" (except surgical 8")						
10a Image intensification has special means of activation to operate						
b Continuous signal during HLC (High Level Control)						
11 The shutter restricts the useful beam to the diameter of the input phosphor						
12 Minimum field size at greatest SSD is less or equal to 2" X 2"						
13 Extraneous light in examination room eliminated						
C Fixed Radiographic Equipment						
1 Collimating devices coned to size of useful beam						
2 Additional filtration clearly indicated						
3a A switch terminates exposure						
b Can it be reset?						
4 Switch permanently located behind shield						
5 Exposure terminates when switch released						
6 Visible mA indicator during exposure						
7 Technique factors indicated before exposure						
8 Tube head selection indicated at tube head and at console						
9 Light field dimensions indicated at designated SID's						
10 * X-Ray field dimensions agree with light field dimensions to within 2% of SID						
11 * X-Ray field dimensions agree with collimator field size settings to within 2% of SID						
12 * Center of X-Ray field aligned with center of light field to within 2% of SID						
*Use for Numbers 10, 11 and 12 above				SKETCH OF SETUP		
SOURCE TO TABLE TOP (film on table top)	COLLIMATOR FIELD SIZE SETTING	LIGHT FIELD DIMENSIONS	X RAY FIELD DIMENSIONS			
13 Illumination is not less than 15 ft candles (160 lux) at 1 meter or at max SID (whichever is less)						
D Mobile Unit (additional questions)						
1 Cannot be operated at SSD of less than 12 inches						
2 Exposure switch can be extended to reach minimum 6 feet distance						
3 The unit is not routinely used in same location						
4 Location of technician is as far away as practical						
5 Technician wears protective apron or stands behind barrier						
6 Mobile (battery) unit energized only with adequate charge						
E Urological Unit (additional questions)						
1 Without cone, tube collimated to useful beam area of 14 X 17 inches at film distance						
2 Radiation scatters twice before entering booth/control cabinet area						
3 Observation window provides radiation shielding to booth/shield personnel						

VI SAFETY (Continued)								YES	NO	N/A
1. Dental Radiological (additional questions)										
1. Source to skin distance limited to 7 inches										
2. For intra-oral radiography, useful beam restricted to diameter of not more than 2.75 inches at min. SSD										
3. Tube head does not drift or vibrate in exposure portion										
4. An open-ended collimated dental cone is used										
5. Film is not held by operator during exposure										
6. Veterinary (additional questions)										
1. Useful beam restricted to minimum field size required by study										
2. Animal handler's body shall not be placed in useful beam without adequate protection										
3. Lowest practical exposure technique factors used to minimize radiation output?										
4. Protective skirt of at least 0.25 mm (or Pb eq.) is provided to protect hands (during catheterization)?										
5. Sandbags, V. troughs, slings or other appropriate ancillary devices are used to assist in preparing animals for radiographic procedures										
6. Log or record is kept of use of X-ray equipment to indicate date of exposure, kilovoltage, milliamperage, exposure time, operator, and ID of animal										
VII. ENTRANCE SKIN EXPOSURE										
A. 1. MONITORING INSTRUMENTS(S)										
NAME					SSN			DATE OF CALIBRATION		
NAME					SSN			DATE OF CALIBRATION		
2. ENVIRONMENTAL CONDITIONS										
2A. MDH PULSE FRACTION THRESHOLD					2B. BAROMETRIC PRESSURE					
B. MEDICAL X RAY										
	FILMS PER WEEK	kVp	mA(s)	TIME (seconds)	SFD (inches)	SIZE	* MEASURE	EXPOSURE IN mR ESE	GUIDE	
1. CHEST						9			30	
2. SKULL						6			300	
3. ABDOMEN						9			750	
4. CERVICAL SPINE						5			250	
5. THORACIC SPINE						9			900	
6. LUMBO-SACRAL SPINE						9			1000	
7. RETROGRADE PYELOGRAM									900	
*SOURCE TO CHAMBER DISTANCE (SCD) _____ inches										
C. DENTAL DATA										
	FILMS PER WEEK	kVp	mA(s)	TIME (seconds)	SFD (inches)	* MEASURE		EXPOSURE IN mR ESE	GUIDE	
BITEWING/ PERIAPICAL									700	
*SOURCE TO CHAMBER DISTANCE (SCD) _____ inches										
D. FLUOROSCOPIC DATA										
NOTE #1: Make with sufficient Phantom material to maximize AERC								SOURCE TO CHAMBER DISTANCE (SCD) INCHES		
	kVp	mA	STANDARD <sup>1,3</sup> EXPOSURE R/min		AERC <sup>2</sup> EXPOSURE R/min		HLC <sup>3</sup> EXPOSURE R/min			
VIEW										
1. Without HLC and without AERC, Limit is 5R/min. Within Limits <input type="checkbox"/> YES <input type="checkbox"/> NO										
2. Without HLC and with AERC, Limit is 10R/min. Within Limits <input type="checkbox"/> YES <input type="checkbox"/> NO										
3. HLC not activated, Limit is 5R/min. Within Limits <input type="checkbox"/> YES <input type="checkbox"/> NO										

VIII SHIELDING, SKETCH AND SCATTER							
<b>A SKETCH (NOT TO SCALE)</b> <div style="border: 1px solid black; height: 100px; width: 100%; position: relative;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); font-weight: bold;">N</div> </div>				<b>B SHIELDING</b>			
		LOCATION	Pb (mm/in)	Conc (mm/in)	HEIGHT (ft)		
1		North					
2		South					
3		East					
4		West					
5		Floor					
6		Ceiling					
7		Doors					
8		Shield					
NOTE: 1 Primary wall/barriers have 1/16 inch (or Pb eq) to 7 feet <input type="checkbox"/> YES <input type="checkbox"/> NO 2 Secondary walls/barriers have 1/21 inch (or Pb eq) to 7 feet <input type="checkbox"/> YES <input type="checkbox"/> NO							
C DOORS AND WINDOWS EQUAL SHIELDING OF WALLS <input type="checkbox"/> YES <input type="checkbox"/> NO (Comments)							
<b>D SCATTER</b>							
TECHNIQUE	kVp	mA( )	TIME (SEC)	PHANTOM	SITD	IN FIELD	
						_____ x	_____ in
LOCATION ON SKETCH	DESCRIPTION					EXPOSURE * TT	MR hr * CH
A							
B							
C							
D							
E							
F							
* TT = X-rays Directed at Phantom on Table Top * CH = X-rays Directed at Phantom on Chest Cassette Holder							
E Is Shielding Adequate? <input type="checkbox"/> YES <input type="checkbox"/> NO (Comments)							
COMMENTS							

**SCOTT MEDICAL CENTER ANNUAL FLUOROSCOPIC SURVEY (Part II)**  
(Supplement to Radiographic Survey Report)

SURVEY PERFORMED BY _____				REPORT NO _____	
SURVEY PERFORMED BY _____				SURVEY DATE _____	
<b>I. ROOM IDENTIFICATION</b>		<b>II. PERSONNEL CONTACTED</b>			
Room Number _____	A. NAME _____	B. RANK _____	C. TITLE _____		
<b>III. ENVIRONMENTAL CONDITIONS AND MDH SETTINGS</b>					
<b>A. 1. MONITORING INSTRUMENTS(s)</b>					
NAME _____		SSN _____		DATE OF CALIBRATION _____	
NAME _____		SSN _____		DATE OF CALIBRATION _____	
<b>2. ENVIRONMENTAL CONDITIONS</b>					
<b>2A. MDH PULSE FRACTION THRESHOLD</b> _____			<b>2B. BAROMETRIC PRESSURE (Millibars)</b> _____		
<b>IV. EQUIPMENT IDENTIFICATION</b>					
	MANUFACTURER	MODEL NO		SERIAL NO	
A. CONSOLE					
B. COLLIMATOR					
C. TUBE INSERT					
D. TUBE HOUSING					
E. OTHER					
<b>1. PHASE</b>		<b>2.</b>		<b>3. DATE AND NO. OF LAST SURVEY</b>	
<input type="checkbox"/> SINGLE <input type="checkbox"/> THREE PHASE <input type="checkbox"/> CONSTANT POTENTIAL		<input type="checkbox"/> PORTABLE <input type="checkbox"/> SPECIAL PURPOSE (Specify) _____ <input type="checkbox"/> ROUTINELY USED			
<b>V. SYSTEM PARAMETERS</b>					
	kVp		mA		Time
	MIN	MAX	MIN	MAX	MIN    MAX
FLUOROSCOPY					MIN
SPOT FILM/CINE					SEC
<b>VI. SAFETY CHECK</b>					YES    NO    N/A
A. Technique factors indicated before exposure					
B. Visible Beam On indication					
C. Lead Drapes Around Image Receptor					
D. Lead Drapes Used Routinely					
F. Bucky Shield included in table					
F. Bucky Shield used routinely					
G. Viewing System					
<input type="checkbox"/> Direct Fluoro Screen <input type="checkbox"/> Mirror <input type="checkbox"/> Image Intensify <input type="checkbox"/> Television Monitor					
H. Radiographic Capability					
<input type="checkbox"/> Spot Film Device <input type="checkbox"/> CINE					
I. Deadman Exposure Switch					
<input type="checkbox"/> Foot Pedal <input type="checkbox"/> Push Button					
J. Controls at Operators Location					
<input type="checkbox"/> kVp <input type="checkbox"/> mA <input type="checkbox"/> Time					
K. X Ray tube linked to image receptor					
L. X Rays interrupted if image receptor removed					
M. Audible signal when timer expires					
<input type="checkbox"/> Signals continuously or for _____ seconds					
N. Timer terminates X Ray exposure					
O. High level control (HLC)					

VI SAFETY CHECK (Continued)		YES	NO	N/A
P	Continuous audible signal when HEC activated			
Q	Automatic exposure rate control (AERC)			
Controls: <input type="checkbox"/> kVp <input type="checkbox"/> mA				
R	Continuous adjustment of X Ray field size			
S	Dimmer switch on lights			
T	Other			

VIII. MONTHLY FLUOROSCOPIC REPORTS		
ANY ADVERSE TRENDS?	AVERAGE EXPOSURE OVER 30 DAYS	
	mR/hr	mR/hr/mAs

IX. SHIELDING, SKETCH AND SCATTER	
-----------------------------------	--

A SHIELDING (SEE REPORT # _____)	
DOORS AND WINDOWS EQUAL SHIELDING OF WALLS <input type="checkbox"/> YES <input type="checkbox"/> NO	

B SKETCH (NOT TO SCALE)	

C SCATTER				
TECHNIQUE	kVp (Maximum Output)	mA	PHANTOM	SIZE FIELD
				IN X IN
LOCATION ON SKETCH	DESCRIPTION			EXPOSURE mR/hr
A				
B				
C				
D				
E				
F				
G				

X. WORKLOAD									
A. FLUORO				B. SPOT FILMS				C. CINE	
								AVAILABLE <input type="checkbox"/> YES <input type="checkbox"/> NO	
1 Number of Examinations per Week				1 Number of Spot Films during typical examination				1 Number of Cine examinations per week	
2 Maximum Fluoro kVp				2 Maximum Spot Film kVp				2 Average number of Cine per frames examination	
3 Typical Fluoro mA				3 Typical Spot Film mA ( )				3 Maximum Cine kVp	
4 Beam on time during typical examination		MIN						4 Typical Cine mA ( )	

XI. TUBE OUTPUT						
A. FLUORO MEASUREMENTS (Sufficient Phantom material used to maximize AERC if available)					Phantom material used (and thickness) ( in/mm)	
	kVp	mA	STANDARD EXPOSURE R/min	AERC EXPOSURE R/min	HLC EXPOSURE R/min	
1						
2						
3						
4						
5						

TABLE TOP TO PROBE DISTANCE _____	
(a) Without HLC and without AERC, Limit is 5 R/min Maximum exposure rate within limits:	<input type="checkbox"/> YES <input type="checkbox"/> NO
(b) Without HLC and with AERC, Limit is 10 R/min Maximum exposure rate within limits:	<input type="checkbox"/> YES <input type="checkbox"/> NO
(c) HLC not activated, Limit is 5R/min Maximum exposure rate within limits.	<input type="checkbox"/> YES <input type="checkbox"/> NO
(With HLC activated there is NO limit)	

B. SPOT FILM MEASUREMENTS				C. CINE MEASUREMENTS			
PHOTOTIMED TECHNIQUE	MA ( )	PHANTOM TYPE	THICKNESS (in/mm)	PHOTOTIMED TECHNIQUE	MA ( )	PHANTOM TYPE	THICKNESS (cm)
	kVp	EXPOSURE mR	EXPOSURE TIME (seconds)		kVp	FRAMES	EXPOSURE mR
1				1			mR/FRAMES
2				2			
3				3			
4				4			
5				5			
6				6			
				7			

XII. BEAM QUALITY			
A. MEASUREMENTS			B. RESULTS
TECHNIQUE	kVp	mA	mm AL
NOTE: Maintain about 3.5 mm Al in beam, first above probe and in increasing amounts before probe			1 HVL
			2 Minimum acceptable HVL
FILTER THICKNESS ADDED (mm Al)	EXPOSURE (R/min)	3 Satisfies requirements <input type="checkbox"/> YES <input type="checkbox"/> NO	ADDITIONAL REQUIREMENTS
0.0		EQUIPMENT SET UP	
1.5			
2.5			
4.5			

XIII.

## COLLIMATION

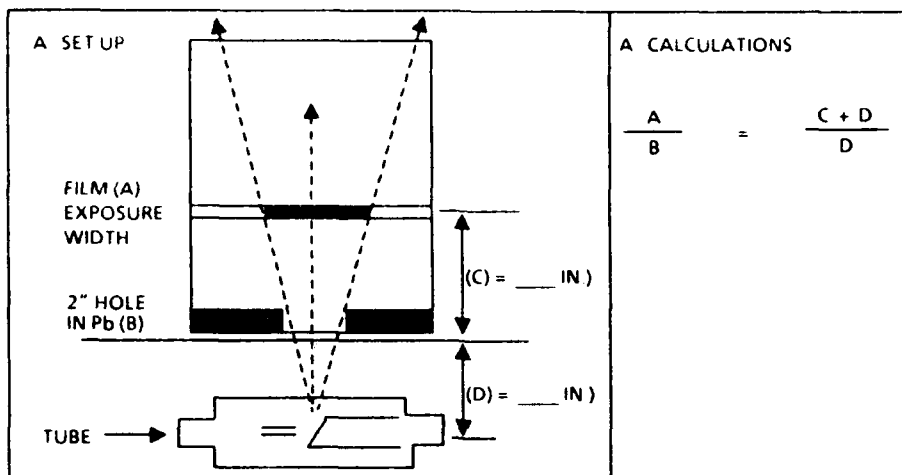
A \*STTD

1. MINIMUM STTD MEASURED (Inches)

2. MINIMUM STTD GREATER THAN 15 INCHES

☐ YES☐ NO

\* SOURCE TO TABLE TOP DISTANCE



## B COLLIMATION

1. MINIMUM ITTD\*\* (Inches)

2. X RAY FIELD SIZE AT TABLE TOP WHICH FILLS IMAGE RECEPTOR

3. MAXIMUM X-RAY FIELD SIZE AT TABLE TOP

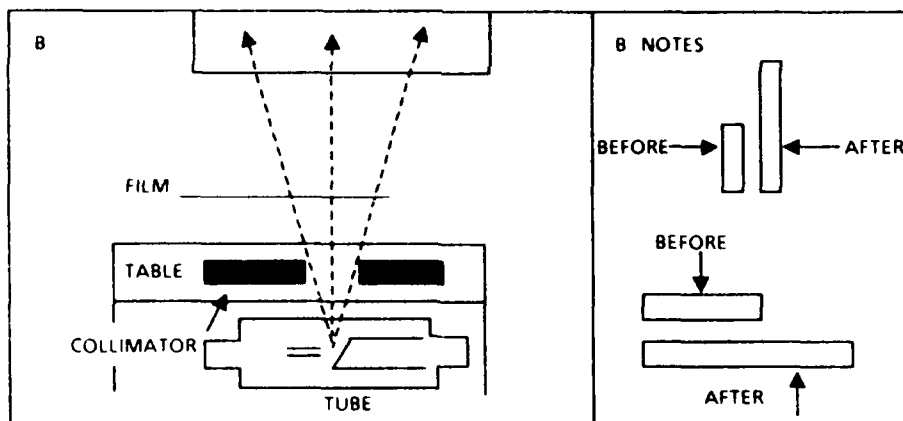
4. MAXIMUM X-RAY FIELD SIZE LESS THAN IMAGE RECEPTOR FIELD SIZE

☐ YES☐ NO

5. AUTO COLLIMATION FIELD SIZE

6. AUTO COLLIMATION FIELD SIZE LESS THAN OR EQUAL TO IMAGE RECEPTOR FIELD SIZE

\*\* IMAGE RECEPTOR TO TABLE TOP DISTANCE



REMARKS

# SCOTT MEDICAL CENTER ANNUAL RADIOGRAPHIC SURVEY

(Field Form)

SURVEY PERFORMED BY _____						REPORT DATE _____	
<b>I. FACILITY AND EQUIPMENT IDENTIFICATION</b>							
A. EQUIPMENT IDENTIFICATION (Model or Type)		B. PMEL NUMBER		C. WHAT IS IT?		D. ROOM NO.	
<b>II. RADIATION PROTECTION</b>						YES	NO
A. Have there been changes in qualities, equipment or procedures since last radiation protection survey?							
B. Personnel shielding stored properly?							
C. Personnel shielding tested? <input type="checkbox"/> Semi-Annual <input type="checkbox"/> Yearly							
D. Are personnel shields used routinely?							
E. Personal dosimeters worn?							
F. Personnel shielding available?							
Aprons							
Gloves							
Gonadal							
G. Operators do not routinely hold patients?							
H. Operators use shielding when holding patients?							
<b>III. SAFETY</b>							
A. GENERAL							
1. Are Warning Signs posted?							
"Knock before Entering"							
B. Fluoroscopic Equipment							
1. Drapes or hinged or sliding panels intercept scattered radiation							
2. X Rays interrupted if image receptor removed							
3. Timer's audible signal sounds at end of 5 minutes without turning off							
4. The shutter restricts the useful beam to the diameter of the input phosphor							
5. Minimum field size at greatest SSD is less or equal to 2" X 2"							
C. Fixed Radiographic Equipment							
1. Collimating devices coned to size of useful beam							
2. * X Ray field dimensions agree with light field dimensions to within 2% of SID							
3. * X Ray field dimensions agree with collimator field size settings to within 2% of SID							
4. * Center of X Ray field aligned with center of light field to within 2% of SID							
*Use for Numbers 2, 3, and 4 above						SKETCH OF SETUP	
SOURCE TO TABLE TOP (film on table top)		COLLIMATOR FIELD SIZE SETTING		LIGHT FIELD DIMENSIONS		X RAY FIELD DIMENSIONS	
<b>IV. ENTRANCE SKIN EXPOSURE</b>							
A. 1. MONITORING INSTRUMENT(S)							
NAME _____				SSN _____		DATE OF CALIBRATION _____	
2. ENVIRONMENTAL CONDITIONS		2A. MD4 PULSE FRACTION THRESHOLD _____			2B. BAROMETRIC PRESSURE _____		
8. MEDICAL X RAY	FILMS PER WEEK	kVp	mA(s)	TIME (seconds)	SSD (inches)	SIZE	* MEASURE
EXPOSURE IN mR ESE (calculated)							
GUIDE							
1. CHEST						9	30
2. SKULL						6	300
3. ABDOMEN						9	750
4. CERVICAL SPINE						5	250
5. THORACIC SPINE						9	900
6. LUMBO SACRAL SPINE						9	1000
7. RETROGRADE PYELOGRAM							900
8. OTHER							
*SOURCE TO CHAMBER DISTANCE (SCD) _____ inches							

NR 44,1241

# PROCESSOR MONITORING LOG

PROCESSOR NUMBER

MONTH	YEAR	TECHNICIAN(S)																																																																																																																																																																																																																																																																								
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**NOTE:**  
Measure **FOG**  
in an area away  
from **STEP**  
wedge.

**NOTE:**  
Example:  
Day one:  
Step 10 = 1.90  
Step 8 = -1.00  
DENSITY  
DIFF = 90  
  
Day Two:  
Step 10 = 2.02  
Step 8 = -1.02  
DENSITY  
DIFF = 1.00

USE REVERSE FOR COMMENTS

USAF MED CEN, SCOTT Form 253, SEP 86

## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

NUCLEAR MEDICINE MONTHLY SELF-INSPECTION CHECKLIST				MONTH	YEAR
LOCATION LOG/CHECKLIST	TEST/RECORD	FREQUENCY	INTERVAL ACCOMPLISHED	DISCREPANCIES NOTED	INITIALS
1 Book 1 (D-14) Nuc Med	Dose Calibrator Constancy	Daily			
2 Book 1 (D-14)	Dose Calibrator Linearity	Quarterly			
3 Book 1 (D-14)	Dose Calibrator Accuracy	Semi-annually			
4 Book 1 (D-14)	Dose Calibrator Geometrical Variation	Initially			
5 Book 1 (D-14)	Gamma Auto Well Constancy	Daily			
6 Book 2 (D-14)	Liquid RAD Waste Log	Daily			
7 Book 2 (D-14)	Solid RAD Waste Log	Weekly (or as produced)			
8 Book 2 (D-14)	RAD Waste Level Survey	Weekly			
9 Book 2 (D-6)	Xenon Exhaust	After each use			
10 Book 2 (D-14)	Xenogard Filters Cleaned (CO <sub>2</sub> /Moisture)	Monthly			
11 Book 2 (D-14)	Tc 99 Generator Shipment (Swipe) Survey	Weekly			
12 Book 3 (D-14)	Room Level Surveys	Daily			
13 Book 3 (D-14)	Personnel Surveys	Daily			
14 Book 4 (D-14)	Laboratory Swipes	Weekly			
15 Book 4 (D-14)	Hallway Swipes	Monthly			
16 Book 4 (D-14)	RAD Storage Area Swipes	Monthly			
17 Book 37 (D-14)	Uptake Probe Chi Square	Monthly			
18 Book 38 (D-14)	Chi Square Auto Well	Weekly			
19 Book 35 (D-10)	Radiochromatog- raphy Co57-Cu60	Daily			
20 File 4 10 5 in RSO Office	Gamma Ref Sources (4) (Visual inspection)	Daily			
21 File cards in Nuc Med (D-10)	Molybdenum Breakthrough	After each elution			
22 Book 34 & 34.1 in Entry to D-10	Package Surveys/Receipt	Daily			
23 File 4 10 5 in RSO Office	Sealed Source Inventory	Quarterly			
24 File 4 10 5 in RSO Office	Leak tests	Semi-annually			
25 Book 36 Rm D 6 Nuc Med	Xenon-133 Monitor MPC Level after use/log check	Quarterly			
26 File 4 10 11 in RSO Office	Ventilation Survey	Quarterly			

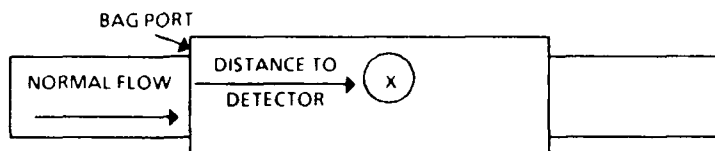
LOCATION LOG/CHECKLIST	TEST/RECORD	FREQUENCY	INTERVAL ACCOMPLISHED	DISCREPANCIES NOTED	INITIALS
27 Book 10 Rm D6-D13	Gamma Flood Uniformity	Check daily			
28 Book 10 Rm D6 D13	Gamma Flood Resolution	Weekly			
29 Book 10 Rm D6-D13	Unified Calibration	Daily			
30 Book 11 Rm D16	Uptake Unit Log (CS 137)	As Used			
31 File 4-1-3 in RSO Office	Personnel Radiation Safety Training	Annually			
32 File 4-9-4 in RSO Office	Radiation Safety Committee	Quarterly			
33 Blue Books in RSO Office	Personnel Dosimetry Review (AF 1499)	Monthly			
34 Wall Chart and Book 25 in RSO Office	Radiac Battery Check and calibration	NOTE. Bat check is every 2 weeks			
	a Victoreen 740F	Semi-annual			
	b Victoreen 440	Semi-annual			
	c E-520 SN 2774	Semi-annual			
	d E-520 SN 2754	Semi-annual			
	e Ludlum 12 SN22728	Semi-annual			
	f Ludlum 12 SN17058	Semi-annual			
	g Victoreen 470A (Panoramic) 3291	Semi-annual			
	h Victoreen 470A (Panoramic) 3063	Semi-annual			
	i 541L Dosimeters	Quarterly			
	j Ludlum 61s	Yearly			
	k E-520	Semi-annual			
	l E-520	Semi-annual			
	m E-520	Semi-annual			
35 Book 25 in Rm D-14	Radiation Detection Equip Repair	Monthly			
36 Book 9 in RSO Office	Radiation Mat Chronological Record	Monthly			
<b>OTHER (NON NUC MED)</b>					
1 Book 6 in Rm D-14	Mammographic Phantom Check	Monthly			
2 Book 7 in Console Rm D-23	CT Uniformity	Daily			
INSPECTION PERFORMED BY				DATE	

SCOTT MEDICAL CENTER ANNUAL RADIOGRAPHIC SURVEY			TYPE BAGGAGE INSPECTION UNIT
SURVEY PERFORMED BY			REPORT DATE
SURVEY PERFORMED BY			REPORT DATE
<b>FACILITY IDENTIFICATION</b>			
A. ORGANIZATION 375 TRNSS TROP	B. BUILDING NO P 8	C. ROOM NO MAIN	D. PHONE NO 62014
<b>I. EQUIPMENT IDENTIFICATION</b>			
	MANUFACTURER	MODEL NO	SERIAL NO
A. CONSOLE			
B. COLLIMATOR			
C. TUBE INSERT			
D. TUBE HOUSING			
E. OTHER			
1. PHASE <input type="checkbox"/> SINGLE <input type="checkbox"/> THREE PHASE <input type="checkbox"/> CONSTANT POTENTIAL		2. <input type="checkbox"/> MOBILE <input type="checkbox"/> FIXED <input type="checkbox"/> LUGGAGE <input checked="" type="checkbox"/> SPECIAL PURPOSE (Specify)	
			3. DATE OF LAST SURVEY N/A
<b>II. PERSONNEL CONTACTED</b>			
NAME	RANK	TITLE	
A			
B			
C			
D			
E			
<b>III. ENVIRONMENTAL CONDITIONS AND MDH SETTINGS</b>			
A. BAROMETRIC PRESSURE (Millibars)		B. MDH PULSE FRACTION THRESHOLD	
<b>IV. RADIOGRAPHERS</b>			
NAME	RANK	COURSE NUMBER	DATE GRADUATED
A			
B			
C			
D			
E			
F			
G			
H			
I			
J			

V MONITORING INSTRUMENTS (Used During Survey(s))				
MANUFACTURER	MODEL	SERIAL NUMBER	CALIBRATION DATE	
1				
2				
3				
4				
DOSIMETERS			YES	NO
1. Required				
2. Type used <input type="checkbox"/> TLD <input type="checkbox"/> POCKET <input type="checkbox"/> OTHER (Specify)				
3. One per operator?				
4. Worn during operation?				
5. Stored properly with control?				
VI SAFETY REQUIREMENTS				
A. EMISSIONS				
1. Any point the outside external surface does not exceed 0.5 mR/hr. (Also see scatter measurements, Pages 2, 3, and 4)				
2. Above measurements made a maximum X-ray exposure including open door(s)				
B. DOORS				
1. Has permanent floor				
C. PORTS AND APERTURES				
1. Insertion of any part of human body through any port into 1° beam is not possible				
2. Through any aperture is not possible				
D. INTERLOCKS				
1. Each door has a minimum of 2 safety interlocks (one, when door opens, causes disconnection to high voltage generator)				
2. Each access panel has at least one safety interlock				
3. X-rays cannot be resumed except by initialing control(s) (Not safety interlock or main power control)				
4. One safety interlock will always continue working, not withstanding the failure of any single component in the cabinet system				
E. GROUND FAULT				
1. Ground fault will not result in generation of X-rays				
F. CONTROLS AND INDICATORS				
1. A keyed activated control is present (Without key, X-rays are not possible)				
2. A control is present to initiate and terminate the generation of X-rays				
3. Two independent "X-ray on" indicators are present				
a. One may be mA indicator labeled "tube current"				
b. Other(s) must be labeled <u>X-Ray ON</u>				
4. One indicator (No 3 above) is visible from each door, panel and post. (The indicator must also be labeled <u>X-RAY ON</u> )				
G. WARNING LABELS				
1. At "control location" is label saying <b>CAUTION X RAYS PRODUCED WHEN ENERGIZED</b>				
2. At each part is a label saying <b>CAUTION DO NOT INSERT ANY PART OF THE BODY WHEN SYSTEM IS ENERGIZED-X RAY HAZARD</b>				
H. OPERATOR PRESENCE				
1. Operator can see all parts/doors during X-ray operation				
2. Operator can terminate the exposure at any time				
I. MODIFICATION				
1. Modification of unit must be performed by certified manufacturer and rectify unit in accordance with 1016.2 and 1010.3 of 21 CFR				
J. ADDITIONAL REQUIREMENTS				
1. Operating instructions provided by manufacturer				
<b>NOTE:</b> Must include information regarding kVp, mA, duty cycle, safety, precautions and maintenance times				

VI. SAFETY REQUIREMENTS (Continued)		YES	NO	N A
J ADDITIONAL REQUIREMENTS (Continued)				
2 X-ray tube utilization log (for maintenance purposes)				
a Date of first/last usage				
b Date(s) of maintenance conducted				
3 Interlocks tested				
a All function properly				
b Interval tested				
<input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Yearly				

VII. TUBE OUTPUT



X-RAY UNIT TRIAL	kVp	mA	TIME (seconds)	* SCD (inches)	PHANTOM USED	DISTANCE TO DETECTOR (X)	mR/hr (Exposure)
1							
2							
3							
4							

INSTRUMENT USED.

\* Source to Chamber Distance

VIII. WORKLOAD (Estimated)		
MAX kVp	TYPICAL mA	BEAM ON TIME WEEK
		HRS.

IX. LOCATION OF EQUIPMENT AND EMISSIONS

1 NOTE: Show location of baggage handler, permanent staff and general public. Also show position of labels, controls, tube, monitor, indicators and warning lights



LOCATION SKETCH (Not to Scale)

IX.

## LOCATION OF EQUIPMENT AND EMISSIONS (Continued)

2 NOTE: B - E shows location of emissions by side

B WHICH WALL?

☐ N☐ S☐ E☐ W

kVp

mA

FRONT  
VIEW  
SEEN  
FROM  
OUTSIDE

C WHICH WALL?

☐ N☐ S☐ E☐ W

kVp

mA

FRONT  
VIEW  
SEEN  
FROM  
OUTSIDE

IX.

## LOCATION OF EQUIPMENT AND EMISSIONS (Continued)

2 NOTE: B-E shows location of emissions by side (Continued)

D WHICH WALL?

☐ N☐ S☐ E☐ W

kVp

mA

FRONT  
VIEW  
SEEN  
FROM  
OUTSIDE

E WHICH WALL?

☐ N☐ S☐ E☐ W

kVp

mA

FRONT  
VIEW  
SEEN  
FROM  
OUTSIDE

X.

OBSERVATIONS AND REMARKS FOR FACILITY IN BLDG \_\_\_\_\_, ROOM \_\_\_\_\_.

DATA FOR THIS FACILITY ARE PROVIDED IN ATTACHMENT \_\_\_\_\_.

FREQUENCY: Leak Tests (X) conducted January and July semi-annually Scheduled within 2 weeks of 1st day of the Month							LEAK TESTS AND SUMMATION OF SOURCE ACTIVITY										ACTION LEVEL C14 = < 5 pCi ALL OTHERS = < 50 pCi				
SOURCE AND TYPE	CALIB. DATE	ACTIVITY	ID NUMBER	ROOM	OCT 1987	ACTIVITY SUMMATION	JAN 1988	APR 1988	JUL 1988	OCT 1988	ACTIVITY SUMMATION	JAN 1989	APR 1989	JUL 1989	OCT 1989	ACTIVITY SUMMATION	JAN 1990	APR 1990	JUL 1990	OCT 1990	ACTIVITY SUMMATION
1 Flood Source Co-57	4-15-78	2 mCi	2071	D-10																	
2 LEOV Fld Source Co 57	10-15-84	5 mCi	3911084E-01	D-10																	
3 Calib Source Co-57	5-25-82	1 09 mCi	3520582A-05	D-10																	
4 LEOV Fld Source Co-57	3-15-81	2 mCi	3900381B-01	D-10																	
5 LEOV Fld Source Co-57	7-15-82	2 mCi	3900782C-03	D-10																	
6 Calib Source Co-57	1-29-79	299 uCi	3510179A-24	D-10																	
7 Calib Source Co 57	7-30-84	5 0 mCi	2060784A-26	D-10																	
8 Calib Source Cs 137	2-1-79	210 uCi	3560279A-47	D-10																	
9 Calib Source Cs-137	6-1-72	1 mCi	2FA	D-10																	
10 Calib Source Ba-133	2-22-79	274 uCi	3580279B-08	D-10																	
11 Calib Source Ba 133	3-1-85	1 043 mCi	130-112	D-10																	
12 Night Vision Tester C 14		1 6 mCi	1310	Flight Surgeon's Office																	
13 Calib Source Co-60	2-2-79	51 uCi	340279A-15	D-10																	
14																					
15																					
16																					
17																					
INITIALS OF SURVEYOR →																					

FREQUENCY: Quarterly, Jan-Apr-Jul-Oct, within 2 weeks of first of month

# QUARTERLY INVENTORY OF SEALED SOURCES

SOURCE	CALIB DATE	ACTIVITY (uCi)	ID NUMBER	OCT 1987	JAN 1988	APR 1988	JUL 1988	OCT 1988	JAN 1989	APR 1989	JUL 1989	OCT 1989	JAN 1990	APR 1990	JUL 1990	OCT 1990	JAN 1991	APR 1991	JUL 1991	OCT 1991	JAN 1992	APR 1992	JUL 1992	OCT 1992
1 Cs-137	No Date	0.8-1.0	162068																					
2 Cs-137	No Date	0.8-1.0	162068																					
3 Cs-137	No Date	0.8-1.0	251194																					
4 Cs-137	Apr 1971	0.1	184642																					
5 Co-57 (2)	9-1-72	9.5	188041																					
6 Co-57 (3)	10-15-79	9.5	188041																					
7 Eu-152 (4)	No Date	0.5	3CG/4CN 152/154																					
8 I-129	No Date	0.1	Z903																					
9 I-129	No Date (Broken Tip)	0.1	C2372																					
10 I-129	No Date	0.1	A2658																					
11 Ba-133	8-26-82	0.1070	1385																					
12 Am-241	1-1-83	10.7	10132																					
13 Cs-137	8-1-83	10.617	10788-2																					
14 Am-241	8-1-83	10.045	10788-1																					
15 Cs-137	8-1-83	11.321	10788-3																					
16 I-125	8-15-83	10.05	10788-4																					
17 I-125 (NBS)	10-15-83	11.48	10948																					
18 I-129	12-1-83	4.38	10803																					
19 Co-57	9-17-86	0.121	NES-137A																					
20 I-129	3-3-86	0.0142	NES-222-030386																					
21 I-129	3-3-86	0.0148	NES-222-030386																					
22 Cs-137	4-22-86	0.101	NES 139A-042286-005																					
23 Ba-133	9-15-87	0.103	No # (Brown tip)																					
INITIALS OF SURVEYOR →																								

FREQUENCY: Quarterly, Jan, Apr, Jul, Oct, within 2 weeks of first of month					QUARTERLY INVENTORY OF SEALED SOURCES																			
SOURCE AND TYPE	CALIB DATE	ACTIVITY	ID NUMBER	ROOM	JAN 1988	APR 1988	JUL 1988	OCT 1988	JAN 1989	APR 1989	JUL 1989	OCT 1989	JAN 1990	APR 1990	JUL 1990	OCT 1990	JAN 1991	APR 1991	JUL 1991	OCT 1991	JAN 1992	APR 1992	JUL 1992	OCT 1992
1 Flood Source Co-57	4-15-78	2 mCi	2071	D-10																				
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14																								
15																								
16																								
17																								
INITIALS OF SURVEYOR →																								

SMALL SOURCE RADIOACTIVE MATERIAL PERMIT(S) REPORT (In House Inspection)		PERMIT NUMBER		DATE	MEDICAL FACILITY USAF MEDICAL CENTER, SCOTT SCOTT AFB IL 62225-5300
	N/A	YES	NO	REFERENCE	COMMENTS
1. Was permit documentation in order?				AFR 161 16	
a. Was a current complete set of original documents on file with each user?				AFR 161 16	
b. Were operating instructions and procedures manuals available and current?				Specific conditions of permit (10CFR30 34)	
2. Were facilities adequate in work places where sources were used?					
a. Were facilities configured as required?				10CFR30 34	
b. Was access to radiation/source storage areas controlled as required, e.g., limited to authorized persons and locked when unattended?				10CFR30 34 10CFR20 203 10CFR20 204	
3. Were radioactive sources properly controlled and accounted for?				10CFR30 34 10CFR20 203 10CFR20 204 10CFR20 207	
a. Were periodic inventories of all sources properly conducted and documented (normally quarterly)?				10CFR30 34 10CFR35 14 10CFR34 26	
b. Were procedures available to ensure only authorized quantities of radioactive materials were received and maintained?				10CFR30 34	
4. Did the management programs include a self-inspection program?				AFR 123-1	
a. Were self-inspections documented?				AFR 123 1	
b. Were deficiencies found in self-inspection corrected?				AFR 123-1, para 1-4p(3)(d)	
5. Had a formal ALARA program been established?				10CFR20 1(c) AFMSC/SGPA Ltr 17 Oct 84	
a. Was there written program documentation?				AFMSC/SGPA Ltr 17 Oct 84	
b. Did it include annual review of the radiation safety program, personnel monitoring results, and RPO surveys?				AFMSC/SGPA Ltr 17 Oct 84	
6. Were posting and labeling requirements complied with?				10CFR19 11 10CFR20 203 10CFR20 204 10CFR21 6	
a. NRC Form 3?				10CFR 19 11	
b. Notice of availability of license/regulations, procedures?				10CFR19 11	
c. Radiation area radioactive material signs/labels on rooms, cabinets, containers?				10CFR20 203 10CFR20 408	
7. Were workers properly instructed?				10CFR19 12 10CFR20 206	
a. Were training programs adequate to keep all proficient in radiation protection practices?				10CFR30 34 10CFR19 12 10CFR20 206	
b. Were training records kept for persons requiring instruction?				10CFR30 34	

**SMALL SOURCE RADIOACTIVE  
MATERIAL PERMIT(S) REPORT (In House Inspection) (Continued)**

DATE

	N/A	YES	NO	REFERENCE	COMMENTS
8. Were workers provided radiation exposure results in writing?				10CFR19 13	
a. Were worker exposures within limits?				10CFR20 101 10CFR20 103 10CFR20 104	
b. Was a prior radiation history review documented on new workers?				10CFR20 102	
9. Were annual surveys of sources accomplished by the RPO?				AFR 161-33, para 4.4a(2) AFOSH 161-17, para B3 10CFR20 201	
10. Were required operator logs kept?				10CFR30 34	
11. Were incidents and accidents properly documented and reported?				AFR 161 16 10CFR19 13 10CFR20 402 10CFR20 403 10CFR20 404 10CFR21 21	
12. Was radiation monitoring adequate?				10CFR30 34 10CFR20 201 10CFR20 202 10CFR20 203 10CFR20 205	
a. Was required equipment available?				10CFR30 34	
b. Was equipment properly maintained?				10CFR30 34	
c. Were appropriate radiation survey instruments available and properly calibrated?				10CFR30 34	
d. Were adequate numbers of pocket dosimeters available if required?				10CFR30 34	
e. Were area surveys done in all required locations and documented?				10CFR30 34 10CFR20 103 10CFR20 201 10CFR20 203 10CFR20 401	
f. Were radiation levels in restricted and unrestricted areas within limits?				10CFR20 101 10CFR20 105 10CFR20 203	
g. Were leak tests made at required intervals and results recorded?				10CFR30 34	
h. Was proper notification and disposition made of leaking sources?				10CFR30 34 10CFR20 205 10CFR20 301 10CFR20 311	
i. Were containers of radioactive materials properly labeled (nuclide, activity, date)?				10CFR20 203	
13. Were personnel resources adequate?				Information	
a. Was the radiation protection officer (RPO) properly designated?				Information	
b. Was staffing adequate to satisfy requirements?				10CFR30 34	

SMALL SOURCE RADIOACTIVE MATERIAL PERMIT(S) REPORT (In House Inspection) (Continued)					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
14 Was radioisotope receipt proper?				10CFR20 205	
a Were written procedures available for receiving and opening packages?				10CFR30 34	
b Was documentation of package receipt and survey available?				10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51	
15 Were packages of radioisotopes properly prepared and shipped?				10CFR20 311 10CFR71 49CFR	
a Were proper containers used?				10CFR71	
b Were containers properly marked and labeled?				10CFR20 311 10CFR71	
c Were surveys conducted to document proper labeling?				10CFR71	
d Were shipping documents prepared and a copy kept of confirmation that materials were received?				10CFR20 311 10CFR 71	
e Was shipment by an appropriate mode and carrier (government or commercial carrier other than US mail)?				10CFR71	
16 Was disposal of radioisotopes proper?				10CFR30 34 10CFR20 301 10CFR20 302 10CFR20 303 10CFR20 305 10CFR20 306 10CFR20 311	
a Were there written procedures for radioactive waste disposal?				10CFR30 34	
b Was a disposal log kept to show quantity, type, and method of disposal (decay, transfer)?				10CFR20 301 10CFR20 302 10CFR20 311 10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51	
17 Were the administrative aspects of radioactive material transfer proper?				10CFR20 311 10CFR20 401 10CFR30 41	
a Was transfer only to authorized recipients (only to other permit or NRC license holders)?				10CFR30 41 10CFR40 61 10CFR70 51	
b Were records of transfers kept?				10CFR30 51 10CFR40 61 10CFR70 51	
18 Were devices/outer containers, storage containers and source changers locked?				10CFR34 22	
<b>INSPECTORS NOTES:</b>  1 Be sure to identify specifics of noncompliance 2 Assess noncompliances as to NRC severity levels, levels I-III automatically - 1 unsatisfactory 3 References to 10CFR30 34 reflect the requirement to comply with specific conditions of license/permit including representations made in application					

GENERAL USAF RADIOACTIVE MATERIAL PERMITS (In House Inspection)	PERMIT NUMBER			DATE	MEDICAL FACILITY USAF MEDICAL CENTER, SCOTT SCOTT AFB IL 62225-5300
	N.A	YES	NO	REFERENCE	COMMENTS
1. Were facilities adequate?					
a. Were facilities configured as required?				Specific conditions of permit (10CFR 30.34)	
b. Was access to radiation source storage areas controlled as required (e.g., limited to only authorized persons and locked when unattended)?				10CFR30.34 10CFR20.203 10CFR20.204	
c. Were alarm devices and interlocks functioning properly?				10CFR30.34 10CFR20.203	
d. Were records kept of periodic tests of alarms and interlocks?				10CFR30.34 10CFR20.203	
2. Were radioactive sources properly controlled and accounted for?				10CFR30.34 10CFR20.203 10CFR20.204 10CFR20.207	
a. Were periodic inventories of all sources properly conducted and documented (normally quarterly)?				10CFR30.34 10CFR35.14 10CFR34.26	
b. Were procedures available to ensure only authorized quantities of radioactive materials were received and maintained?				10CFR30.34	
3. Did the management programs include a self-inspection program?				AFR 123.1	
a. Were self inspections documented?				AFR 123.1	
b. Were deficiencies found in self-inspections corrected?				AFR 123.1 para 1.4p(3)(d)	
4. Had a formal ALARA program been established?				10CFR20.1(c) AFMSC/SGPA Ltr 17 Oct 84	
a. Was there written program documentation?				AFMSC/SGPA Ltr 17 Oct 84	
b. Did it include annual review of the radiation safety program, personnel monitoring results, and RPO surveys?				AFMSC/SGPA Ltr 17 Oct 84	
5. Were operating instructions and procedure manuals available and current?				10CFR30.34 Recommended practice	
6. Was permit documentation available and current?				AFR 161.16	
7. Were posting and labeling requirements complied with?				10CFR19.11 10CFR20.203 10CFR20.204 10CFR21.6	
a. NRC Form 32?				10CFR19.11	
b. Notice of availability of license/regulations/procedures?				10CFR19.11	
c. Radiation area/radioactive material signs/labels on rooms/cabinets/containers?				10CFR20.203 10CFR20.408	

GENERAL USAF RADIOACTIVE MATERIAL PERMITS (In House Inspection) (Continued)				DATE	
	N/A	YES	NO	REFERENCE	COMMENTS
8. Were workers properly instructed?				10CFR19 12 10CFR20 206	
a. Were training programs adequate to keep all proficient in radiation protection practices?				10CFR30 34 10CFR19 12 10CFR20 206	
b. Were training records kept for persons requiring instruction?				10CFR30 34	
9. Were workers provided radiation exposure results in writing?				10CFR19 13	
a. Were worker exposures within limits?				10CFR20 101 10CFR20 103 10CFR20 104	
b. Was a prior radiation history review documented on new workers?				10CFR20 102	
10. Were annual surveys of sources accomplished by the RPO?				AFR 161-33 para 4-4a(2) AFOSH 161-17 para B3 10CFR20 201	
11. Were required operator logs kept?				10CFR30 34	
12. Were incidents and accidents properly documented and reported?				AFR 161-16 10CFR19 13 10CFR20 402 10CFR20 403 10CFR20 404 10CFR21 21	
13. Was radiation monitoring adequate?				10CFR30 34 10CFR20 201 10CFR20 202 10CFR20 203 10CFR20 205	
a. Was required equipment available?				10CFR30 34	
b. Was equipment properly maintained?				10CFR30 34	
c. Were appropriate radiation survey instruments available and properly calibrated?				10CFR30 34	
d. Were adequate numbers of pocket dosimeters available if required?				10CFR30 34	
e. Were area surveys done in all required locations and documented?				10CFR30 34 10CFR20 103 10CFR20 201 10CFR20 203 10CFR20 401	
f. Were radiation levels in restricted and unrestricted areas within limits?				10CFR20 101 10CFR20 105 10CFR20 203	
g. Was air sampling performed and documented as required?				10CFR30 34 10CFR20 103 10CFR20 401	
h. Was any required bioassay program properly conducted and results documented?				10CFR30 34 10CFR20 103 10CFR20 108	
i. Was any required respiratory protection program properly conducted and documented?				10CFR20 103 AFOSH Std 161-1	

GENERAL USAF RADIOACTIVE MATERIAL PERMITS (In House Inspection) (Continued)					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
13. Was radiation monitoring adequate? (Continued)					
j. Were environmental monitoring requirements met and documented?				10CFR30 34 10CFR20 106 10CFR20 401	
k. Were leak tests made at required intervals and results recorded?				10CFR30 34	
l. Was proper notification and disposition made of leaking sources?				10CFR30 34 10CFR20 205 10CFR20 301 10CFR20 311	
m. Were containers of radioactive materials properly labeled (nuclide, activity, date)?				10CFR20 203	
14. Were personnel resources adequate?				Information	
a. Was the radiation protection officer (RPO) properly designated?				Information	
b. Was staffing adequate to satisfy requirements?				10CFR30 34	
15. Was radioisotope receipt proper?				10CFR20 205	
a. Were written procedures available for receiving and opening packages?				1-CFR30 34 10CFR20 205	
b. Was documentation of package receipt and survey available?				10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51	
16. Were packages of radioisotopes properly prepared and shipped?				10CFR20 311 10CFR71 49CFR	
a. Were proper containers used?				10CFR71	
b. Were containers properly marked and labeled?				10CFR20 311 10CFR71	
c. Were surveys conducted to document proper labeling?				10CFR71	
d. Were shipping documents prepared and a copy kept of confirmation that materials were received?				10CFR20 311 10CFR71	
e. Was shipment by an appropriate mode and carrier? (Government or commercial carrier other than US Mail)?				10CFR71	
17. Was disposal of radioisotopes proper?				10CFR30 34 10CFR20 301 10CFR20 302 10CFR20 303 10CFR20 305 10CFR20 306 10CFR20 311	
a. Were there written procedures for radio active waste disposal?				10CFR30 34	
b. Was a disposal log kept to show quantity, type, and method of disposal (decay, sewer, transfer)?				10CFR20 301 10CFR20 302 10CFR20 311 10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51	

GENERAL USAF RADIOACTIVE MATERIAL PERMITS (in House Inspection) (Continued)					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
17. Was disposal of radioisotopes proper? (Continued)					
c. If disposal made to sewer, were release quantities and concentrations properly computed based on sewage flows?				10CFR30.34 10CFR20.303	
18. Were the administrative aspects of radioactive material transfer proper?				10CFR20.311 10CFR20.401 10CFR30.41	
a. Was transfer only to authorized recipients (only to other permit or license holders)?				10CFR30.41 10CFR40.61 10CFR70.51	
b. Were records of transfers kept?				10CFR30.51 10CFR40.61 10CFR70.51	
19. Were devices (outer containers, storage containers and source changers) locked?				10CFR34.22	
20. Were source changes made only by licensed individuals?				10CFR34.25	
21. Were facility alarm tests done at 3-month intervals?				10CFR34.29	
22. Were radiation levels from devices within limits (200mR/hr surface, 50mR/hr @ 6")				10CFR34.21	
23. Were pocket dosimeters read daily (when source in use) and results documented?				10CFR34.33	
24. Were written emergency/operating procedures available and review by radiographers/assistants documented?				10CFR34.31 10CFR34.32	
25. Were annual tests of pocket dosimeter response documented?				10CFR34.33	
26. Were daily and 3-month internal inspections, to include maintenance and servicing of equipment documented?				10CFR34.11 10CFR34.28 10CFR34.32	
27. Was there documentation of written examinations of radiographer training?				10CFR34.31	
28. Were source utilization logs kept documenting licensee radiographer site dates used and field survey results?				10CFR34.27	
29. Were shipping documents prepared each time source transported to work sites?				10CFR71	
30. Was transport vehicle properly placarded?				10CFR71	
<b>INSPECTOR'S NOTES</b> 1. Be sure to identify specifics of noncompliance. 2. Assess noncompliances as to NRC severity levels: levels 1-3 automatically 1 unsatisfactory. 3. References to 10CFR30-34 reflect the requirement to comply with specific conditions of license/permit including representations made in application. 4. Items 19-30 apply to industrial radiography only.					

PERMIT COMPLIANCE IN NUCLEAR MEDICINE (In House Inspection)		PERMIT NUMBER		DATE	MEDICAL FACILITY USAF MEDICAL CENTER, SCOTT SCOTT AFB IL 62225-5300
	N/A	YES	NO	REFERENCE	COMMENTS
1. Were facilities adequate?				JCAH Nuc Med Svc Std II	
a. Was space configured as required?				Specific condi- tions of permit (10CFR 30.34) JCAH Nuc Med Svc Std II	
b. Was access to radiation/source storage areas controlled as required, e.g., limited to only authorized persons and locked when unattended?				10CFR30.34 10CFR20.203 10CFR20.204	
c. Was the hot lab separated from the patient area?				10CFR30.34 JCAH Nuc Med Svc Std II	
d. Was a suitable waste storage area provided (shielded, secured, etc)?				10CFR30.34 JCAH Nuc Med Svc Std II, III	
e. Were patient restrooms provided?				10CFR30.34 JCAH Nuc Med Svc Std II	
f. Were patient dressing rooms available if required?				10CFR30.34 JCAH Nuc Med Svc Std II	
g. Was the dose preparation area shielded to include a body shield for the technician?				10CFR30.34 JCAH Nuc Med Svc Std II, III	
h. Was adequate provision made for storage of generators and brachytherapy sources?				10CFR30.34 10CFR20.203 10CFR20.207	
2. Did the management programs include a self- inspection program?				AFR 123-1	
a. Were self inspections documented?				AFR 123-1	
b. Were deficiencies identified in self-inspections corrected?				AFR 123-1 AFR 123-1, p 1-4p(3)(d)	
3. Did a formal ALARA program exist?				10CFR20.1 JCAH Nuc Med Svc Std III AFMSC/SGPA Ltr 1 7 Oct 84	
a. Were annual reviews adequately documented in radiation safety committee minutes?				10CFR35.11	
b. Did reviews address personnel dosimetry results, status of the radiation safety program, and area survey results?				10CFR 35.11 10CFR20.20 AFR 161.33 AFMSC/SGPA Ltr 17 Oct 84	
4. Were personnel resources adequate?				Information	
a. Were authorized vs assigned numbers of personnel appropriate for the workload?				Information	
b. Was the RPO appropriately appointed?				10CFR35.14	
c. Was an attending medical physicist identified?				JCAH Nuc Med Svc Std I	
d. Were technicians properly trained (phase II nuc med graduates)?				10CFR 35.14 JCAH Nuc Med Svc Std I	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE (In House Inspection) (Continued)				DATE	
	N/A	YES	NO	REFERENCE	COMMENTS
5. Was the radiation safety committee properly functioning?				10CFR30 33 10CFR35 11(b) JCAH Nuc Med Svc Std III, V	
a. Was it properly composed with user, nursing and executive management representatives, and RPO?				10CFR35 11(b) JCAH Nuc Med Svc Std III	
b. Had it reviewed and approved individual users by name if authorized by permit?				10CFR35 11(b) JCAH Nuc Med Svc Std III	
c. Reviewed and approved requests for use of isotopes?				10CFR35 11(b) JCAH Nuc Med Svc Std III	
d. Reviewed radiation safety program and procedures annually?				10CFR35 11(b) JCAH Nuc Med Svc Std III, V	
e. Met at least quarterly?				JCAH Nuc Med Svc Std III	
6. Was permit documentation readily available and in order?				10CFR35 2 10CFR20 401 JCAH Nuc Med Svc Std I	
7. Was there an NRC compliance inspection since the last HSMI?				Information	
8. Were all noncompliances corrected?				10CFR30 34	
9. Were operating instructions and procedures manuals available and current?				10CFR30 34	
a. Was pipeting by mouth prohibited?				10CFR35 14 JCAH Nuc Med Svc Std III	
b. Were smoking and eating prohibited in radiation controlled areas?				10CFR35 14 JCAH Nuc Med Svc Std III	
10. Were radioactive sources properly controlled and accounted for?				10CFR30 34 10CFR20 203 10CFR20 204 10CFR20 207	
a. Were sources properly labeled and dated (isotope, curies and assay date)?				10CFR35 14 10CFR20 203 JCAH Nuc Med Svc Std III	
b. Were quarterly source inventories documented?				10CFR35 14	
c. Were procedures available to ensure only authorized quantities of radioactive materials were received and maintained?				10CFR30 34 JCAH Nuc Med Svc Std I	
11. Was radioisotope receipt proper?				10CFR20 205	
a. Were written procedures available for receiving and opening packages?				10CFR30 34 10CFR20 205	
b. Were isotopes delivered direct to nuclear medicine?				10CFR30 34 10CFR20 205	
c. After duty hours, were adequate security procedures available for receipt of isotopes?				10CFR30 34 10CFR20 203 10CFR20 207	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE (In House Inspection) (Continued)					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
11 Was radioisotope receipt proper? (Continued)					
d Was documentation of package receipt and survey available?				10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51 JCAH Nuc Med Svc Std IV	
12 Were posting and labeling requirements complied with?				10CFR19 11 10CFR20 203 10CFR20 204 10CFR21 6	
a NRC Form 3?				10CFR19 11	
b Notice of availability of license/regulations/procedures?				10CFR19 11	
c Radiation area/radioactive material signs/labels on rooms/cabinets/containers?				10CFR20 203 10CFR20 408	
13 Were workers properly instructed?				10CFR19 12 10CFR20 206	
a Were training programs adequate to keep all proficient in radiation protection practices?				10CFR30 34 10CFR19 12 10CFR20 206	
b Were training records kept for persons requiring instruction?				10CFR30 34	
14 Were workers provided radiation exposure results in writing?				10CFR19 13	
a Were worker exposures within limits?				10CFR20 101 10CFR20 103 10CFR20 104	
b Was a prior radiation history review documented on new workers?				10CFR20 102	
15 Were monthly surveys of sources accomplished by the RPO?				AFR 161-33 para 4-4a(2) AFOSH 161 17 para B3 10CFR20 201	
16 Were area surveys performed?				10CFR30 34 10CFR20 201 JCAH Nuc Med Svc Std III	
a Were daily surveys performed by technicians for elution, preparation, and injection areas?				10CFR30 34 Recommended Practice	
b Were weekly surveys performed by technicians of waste storage and lab areas?				10CFR30 34 Recommended Practice	
c Did documentation exist showing swipe results, survey meter readings, as well as actions taken to decontaminate any area over 200dpm/100cm <sup>2</sup>				10CFR30 34 10CFR20 401 JCAH Nuc Med Svc Std IV	
d Was gas proportional or liquid scintillation available for swipe analysis?				10CFR30 34 Recommended Practice	
e If swipe analysis was not available locally, was a certified lab service available?				10CFR30 35	
17 Was personal protective equipment used when required?				10CFR30 34	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE (In House Inspection) (Continued)					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
18 Were syringe shields used when appropriate?				10CFR30 34 10CFR35 14(a)(3) JCAH Nuc Med Svc Std III	
19 Were patient doses assayed?				10CFR30 34 10CFR35 14(a)(3)	
20 Was measurement made for Mo 99 breakthrough?				10CFR35 14(b)(4)	
21 Was the dose calibrator properly calibrated?				10CFR30 34 JCAH Nuc Med Svc Std III	
a Daily constancy using 2 sources?				10CFR30 34 10CFR35 14 10CFR35 31 JCAH Nuc Med Svc Std III	
b Biannual accuracy with 3 NBS traceable sources?				10CFR30 34 10CFR35 14 10CFR35 31 JCAH Nuc Med Svc Std III	
c Quarterly linearity using decay?				10CFR30 34 10CFR35 14 10CFR35 31	
d Geometric variation?				10CFR30 34 10CFR35 14 10CFR35 31	
22 Was diagnostic equipment (gamma camera, thyroid probe, well counter, etc ) calibrated?				10CFR30 34 10CFR35 14 10CFR35 31 JCAH Nuc Med Svc Std III	
23 Were procedures for control of radioactive gases proper?				10CFR30 34	
a Were ventilation surveys made?				10CFR30 34	
b Were charcoal traps surveyed?				10CFR30 34	
c Were emergency procedures posted in case of accidental Xe 133 release?				10CFR30 34	
24 Were incidents and accidents (including misadministrations) properly documented and reported?				AFR 161 16 10CFR19 13 10CFR20 402 10CFR20 403 10CFR20 404 10CFR21 21 10CFR35 41-35 44	
25 Was radiation monitoring adequate?				10CFR30 34 10CFR20 201 10CFR20 202 10CFR20 203 10CFR20 205	
a Was required equipment available and proper for operations?				10CFR30 34 10CFR35 14 JCAH Nuc Med Svc Std II	
b Was equipment upkeep proper?				10CFR30 34 10CFR35 14	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE (In House Inspection) (Continued)					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
25 Was radiation monitoring adequate? (Continued)					
c Were proper radiation survey instruments available and in calibration (daily consistency and annual accuracy)?				10CFR30 34	
d Were adequate numbers of pocket dosimeters available, if required?				10CFR30 34	
e Were area surveys accomplished and documented for all required locations?				10CFR30 34 10CFR20 103 10CFR20 201 10CFR20 203 10CFR20 401	
f Were radiation levels in restricted and unrestricted areas within limits?				10CFR20 101 10CFR20 105 10CFR20 203	
g Was air sampling performed and documented as required?				10CFR30 34 10CFR20 103 10CFR20 401	
h Was any required bioassay program properly documented?				10CFR30 34 10CFR20 103 10CFR20 108	
i Was any required respiratory protection program properly conducted and documented?				1-CFR20 103 AFOSH Std 161-1	
j Were environmental monitoring requirements met and documented?				10CFR30 34 10CFR20 106 10CFR20 401	
k Were leak tests made at required intervals and documented?				10CFR30 34	
l Was proper notification and disposition made of leaking sources?				10CFR30 34 10CFR20 205 10CFR20 301 10CFR20 311	
m Were personal dosimeters properly issued and used?				AFR 161-28 OEHL Dosimetry Manual JCAH Nuc Med Svc Std III	
26 Were packages of radioisotopes properly prepared and shipped?				10CFR20 311 10CFR71 49CFR	
a Were proper containers used?				10CFR71	
b Were containers properly marked and labeled?				10CFR20 311 10CFR71	
c Were surveys conducted to document proper labeling?				10CFR71	
d Were shipping documents prepared and a copy kept of confirmation that materials were received?				10CFR20 311 10CFR71	
e Was shipment by an appropriate mode and carrier (government or commercial carrier other than US Mail)?				10CFR71	
27 Was disposal of radioisotopes proper?				10CFR30 34 10CFR20 301 10CFR20 302 10CFR20 303 10CFR20 305 10CFR20 306 10CFR20 311 JCAH Nuc Med Svc Std III	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE (In House Inspection) (Continued)					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
27 Was disposal of radioisotopes proper? (Continued)					
a Was an adequate waste storage area designated?				10CFR30 34 JCAH Nuc Med Svc Std III	
b Were materials stored for decay to background properly marked and dated?					
c Were there written procedures for radioactive waste disposal?				10CFR 30 34	
d Was a disposal log kept to show quantity, type, and method of disposal (decay, sewer, transfer)?				10CFR20 301 10CFR20 302 10CFR20 311 10CFR20 401 10CFR30 51 10CFR40 61 10CFR70 51 JCAH Nuc Med Svc Std IV	
e If authorized, were liquid wastes properly disposed of in a designated hot sink?				10CFR30 34 10CFR20 203	
f If disposal was via sewer, sewer release quantities and concentrations properly computed based on sewage flow?				10CFR30 34 10CFR20 303	
28 Were the administrative aspects of radioisotope transfer proper?				10CFR20 311 10CFR20 401 10CFR30 41	
a Was transfer only to authorized persons?				10CFR30 41 10CFR40 61	
b Were records of transfer kept?				10CFR70 51	
29 Was the therapeutic use of radiopharmaceuticals controlled?				10CFR35 21 JCAH Nuc Med Svc Std III	
a Were written procedures available for I-131, Au-198 and P-32 administration?				10CFR30 34 10CFR35 14	
b Was proper shielding available for the transport and storage of sources on wards?				10CFR30 34 10CFR20 101 10CFR20 105 10CFR20 203 10CFR20 207 JCAH Nuc Med Svc Std III	
c Were there nursing service instructions for "hot" patients?				10CFR30 34 JCAH Nuc Med Svc Std III	
d Were proper isolation procedures established?				10CFR30 34 JCAH Nuc Med Svc Std III	
e Was the patient area surveyed by the RPO periodically?				10CFR30 34 JCAH Nuc Med Svc Std III	
f Were radioactive wastes on wards properly managed?				10CFR20 301- 20 305 JCAH Nuc Med Svc Std III	
g Were there written procedures for patient release?				10CFR30 34 10CFR35 14 JCAH Nuc Med Svc Std III	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE (In House Inspection) (Continued)					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
29 Was the therapeutic use of radiopharmaceuticals controlled? (Continued)					
h Were considerations made for limiting dose rates in unrestricted areas?				10CFR30 34 10CFR20 101 JCAH Nuc Med Svc Std III	
30 Was the therapeutic use of sealed sources properly managed?				10CFR30 34 10CFR35 21 JCAH Nuc Med Svc Std III JCAH Rad Svc Std III	
a Were there written procedures on handling and use of sources?				10CFR30 34 10CFR35 14 JCAH Nuc Med Svc Std III JCAH Rad Svc Std III	
b Were rooms properly posted and surveys documented?				10CFR30 34	
c Was consideration given to limiting dose rates in unrestricted areas?				10CFR30 34 10CFR20 201 10CFR20 105 JCAH Nuc Med Svc Std II, III	
d Were there adequate nursing service instructions?				10CFR30 34 JCAH Nuc Med Svc Std III JCAH Rad Svc Std III	
e Were there written procedures for recovery of implant sources?				10CFR30 34 10CFR35 14 JCAH Nuc Med Svc Std III	
f Were there written instructions for lost sources, deaths, or emergency surgery in patients?				10CFR30 34 10CFR35 11 JCAH Nuc Med Svc Std III JCAH Rad Svc Std III	
31 Were written emergency spill plans or procedures available?				10CFR30 34 JCAH Nuc Med Svc Std III	
a Were cleanup equipment and materials available?				10CFR30 34	
1b Were appropriate MTF Personnel aware of emergency procedures?				10CFR30 34 JCAH Nuc Med Svc Std III	
c Was an evacuation plan written, if required?				10CFR30 34	
d Were names of responsible individuals posted?				10CFR30 34	
32 Was there a written quantity assurance plan?				AFR 168-13 JCAH Nuc Med Svc Std V	
a Were quality assurance activities documented?				AFR 168-13 JCAH Nuc Med Svc Std V	
b Were daily flood sources used and results documented?				10CFR30 34	

PERMIT COMPLIANCE IN NUCLEAR MEDICINE (In House Inspection) (Continued)					DATE
	N/A	YES	NO	REFERENCE	COMMENTS
32 Was there a written quality assurance plan? (Continued)					
c Was a multichannel analyzer used to assay isotope purity?				10CFR30.34	
d Was liquid chromatography used to verify chemical purity?				10CFR30.34	
e Had patient doses been evaluated to identify the lest dose consistent with quality images?				10CFR20.1	
COMMENTS					

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